EQUO Series

Multi Data Viewer Light

User's Manual

ASC-DE-121119-8 Rev.C

Introduction

Thank you for purchasing our EQUO Series product.

This manual describes the information on the functions, performance and usage required to use Multi Data Viewer Light.

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How to Read This Manual

■Symbols Used in this Manual

Menu items that are displayed on the screen, and windows, dialog boxes and other GUI elements displayed on the PC are indicated enclosed by brackets "[ ]".

■Marks Used in this Manual

Important: Indicates essential information on the product operation and functions, which requires special attention or caution.

Note: Shows operational tips or related useful information.

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1. Overview of Multi Data Viewer

1.1 Features

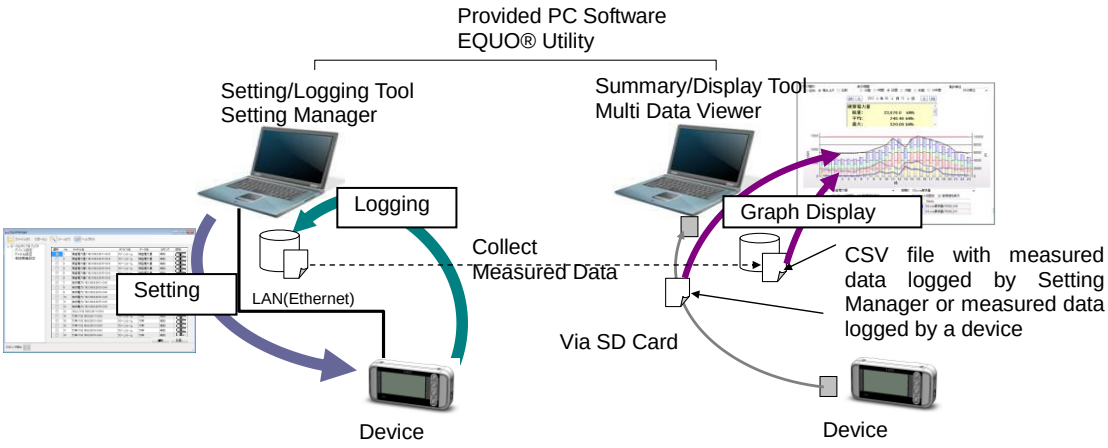
The EQUO system supports manufacturing facilities to achieve an optimal balance between the energy consumption and operation quality.
The provided PC Software Utility is a useful tool package for EQUO system settings, logging, as well as data summation and display required to plan improvement solutions.
The Utility comprises the following two tools:

Summary/Display Tool: Multi Data Viewer Light

Multi Data Viewer Light is a free tool used to summarize and display the logged measurement data of connected devices for analysis. Hereafter in the manual, it is referred to as "Multi Data Viewer".

Setting/Logging Tool: Setting Manager

Starting from the Windows Start menu or Multi Data Viewer, Setting Manager is the tool to make settings on individual devices and their measurement channels. It can also communicate with the devices to directly collect the measured data for logging.



1.2 Procedure to Use

The following procedure is required to use Multi Data Viewer.

●Directly collecting data from devices and log it in PC via communications

Make settings (as required) and send the logging start command using Setting Manager	See " **2.Setting/Logging Tool: Setting Manager**".
↓	
Summarize and display the data using Multi Data Viewer	See "**3.Summary/Display Tool: Multi Data Viewer**".

●Using data collected and logged by devices in SD memory card

Specify parameters on EQUO devices using Setting Manager via communications (as required)	See " **2.Setting/Logging Tool: Setting Manager**".
↓	
EQUO devices log its data in SD memory card	
↓	
Insert the SD memory card in PC	
↓	
Summarize and display the data using Multi Data Viewer	See "**3.Summary/Display Tool: Multi Data Viewer**".

1.3 Operating Environment

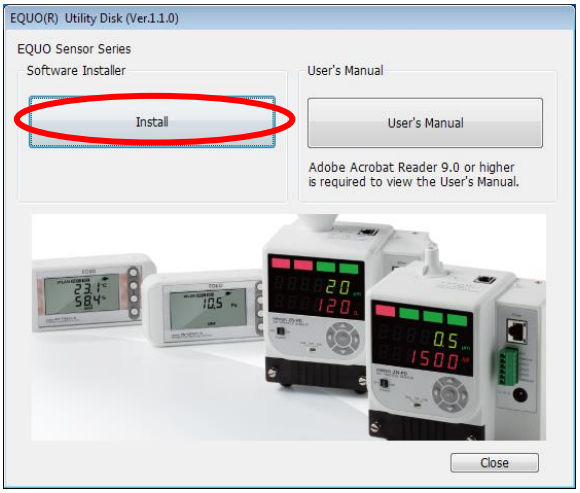
The following table shows the operating environment for Multi Data Viewer.

Compatible OS	Windows XP 32-bit, Windows Vista 32-bit, Windows 7 32-bit/64-bit
CPU	CPU: Intel Core 2 Duo or equivalent
Memory	2 GB (32-bit OS)/3 GB (64-bit OS) (Recommended: 3 GB or more)
Display	Resolution: 1024 x 768 or higher; 65535 colors (16-bit color display) or higher
HDD	1 GB free space is required for installation
CD-ROM Drive	Required for installation
.NET Framework	.NET Framework 3.5 or higher
LAN Port (10BASE-T or 100BASE-TX compatible)	Required for network connection (e.g. Used by the logger in Setting Manager to collect the data for logging from devices via communications)
Compatible Device	・Portable Power Monitor (ZN-CTX21) ・Power Sensor Station (ZN-KMX21) ・Precision Thermo-Humidity Logger (ZN-THX11-S) ・Thermo-Humidity Station (ZN-THX21-S) ・Differential Pressure Station (ZN-DPX21-S) ・Air Flow Sensor (D6FZ-FGX21) ・Air Particle Sensor (ZN-PD□□-S) ・Thermo-Humidity Sensor (WZ-STH01) ・Light Intensity Sensor (WZ-SL01) ・Thermo-Humidity Light Intensity Sensor (WZ-STHL01) ・CO_2 Sensor (WZ-SCD01) ・Power Monitor (*) (KM20, KM50C, KM50E, KM100, KM1) *: Connection through ZN-KMX21 KM20, KM50C, KM50E, KM100 *: Connection through CompoWay/F slave (wireless) (**) KM20, KM50C, KM50E, KM100, KM1-PMU2A KM1-PMU1A, KE1-CTD8E, KM1-EMU8A,ZN-PD□□-S **: Wireless Unit is available only in Japan.
SD Card Reader/Writer and SD Card Slot	Used to read the logging data collected by devices

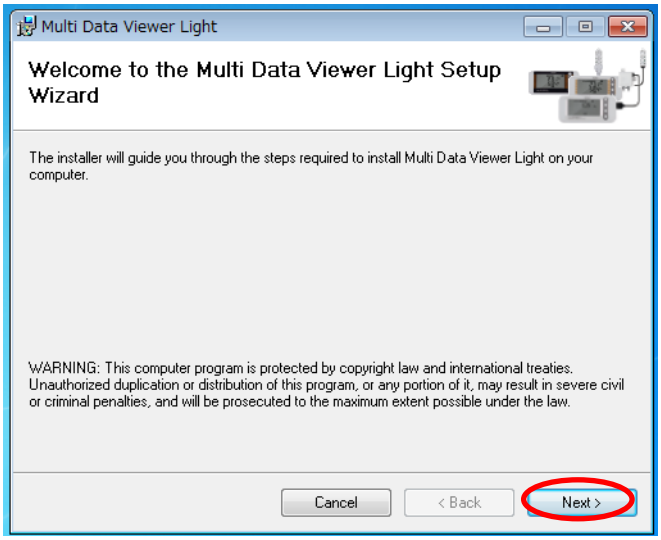
1.4 Installation

(1) Insert the Utility Disk (provided with the EQUO series product) in the PC's CD-ROM drive.

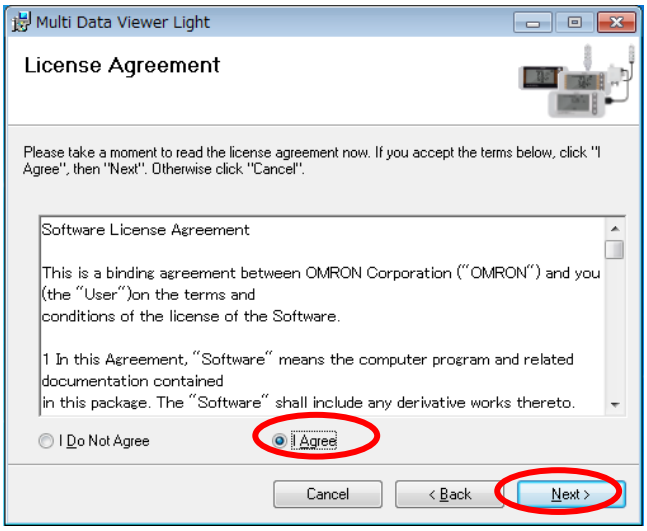
The following initial installation window appears. Or execute the Setup.exe in the CD-ROM drive if the window is not displayed.



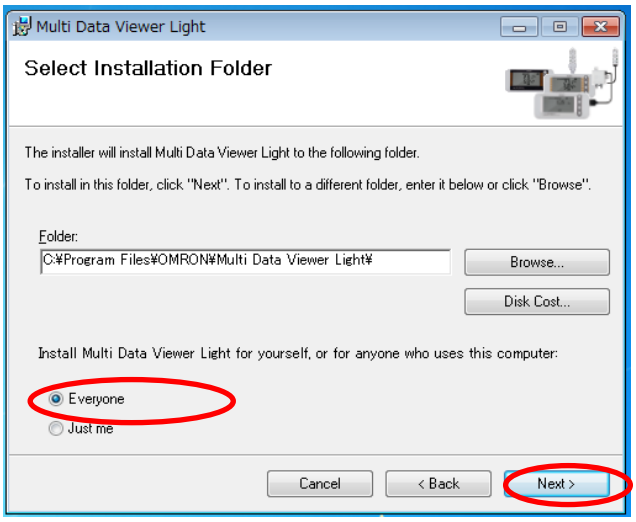
Click the "Next" button.


Multi Data Viewer Light
Welcome to the Multi Data Viewer Light Setup Wizard
The installer will guide you through the steps required to install Multi Data Viewer Light on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

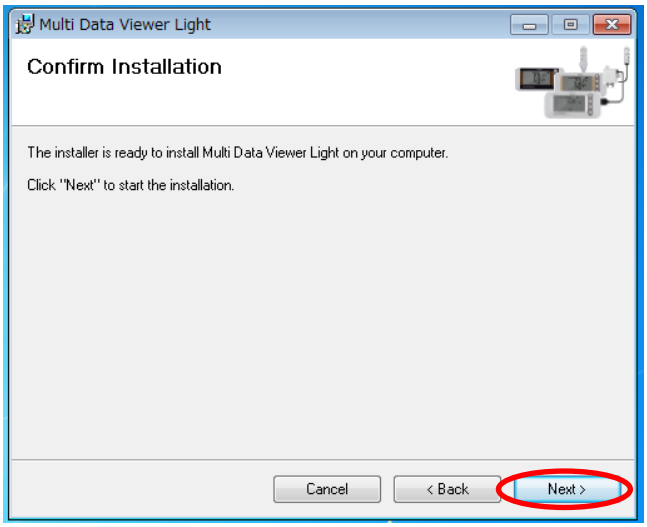
(2) The license agreement window appears. Read through the displayed "Software License Agreement" and select "I agree". Then click the "Next" button.


Multi Data Viewer Light
License Agreement
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
Software License Agreement
This is a binding agreement between OMRON Corporation ("OMRON") and you (the "User")on the terms and
conditions of the license of the Software.
1 In this Agreement, "Software" means the computer program and related documentation contained
in this package. The "Software" shall include any derivative works thereto.
I Do Not Agree
I Agree
Cancel
< Back
Next >

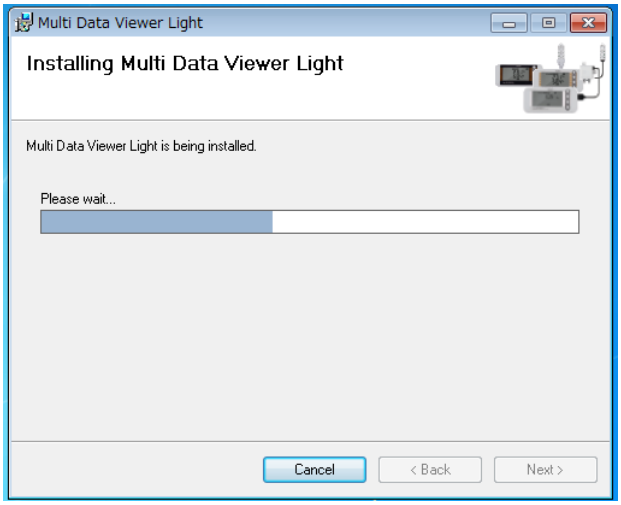
(3) The "Select Installation Folder" window is displayed. Check the installation destination folder and select "Everyone", then click "Next".
To change the installation folder, type in the "Folder" box or click the "Browse" button to select the folder.


Multi Data Viewer Light
Select Installation Folder
The installer will install Multi Data Viewer Light to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:¥Program Files¥OMRON¥Multi Data Viewer Light¥
Browse...
Disk Cost...
Install Multi Data Viewer Light for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

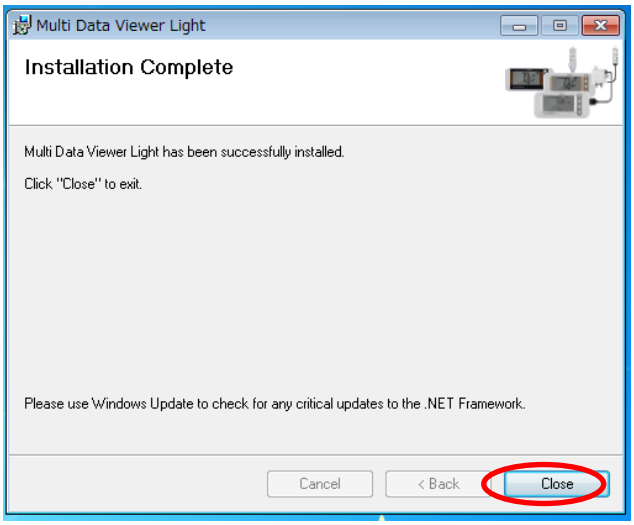
(5) The "Confirm Installation" window appears. Click the "Next" button.


Multi Data Viewer Light
Confirm Installation
The installer is ready to install Multi Data Viewer Light on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

(6) The message "Installing Multi Data Viewer Light" appears.

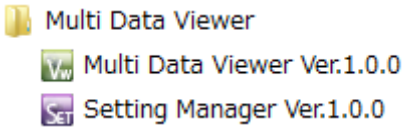


(7) The "Installation Complete" window appears. Click "Close". The installation of Multi Data Viewer is now completed.


Multi Data Viewer Light
Installation Complete
Multi Data Viewer Light has been successfully installed.
Click "Close" to exit.
Please use Windows Update to check for any critical updates to the .NET Framework.
Cancel
< Back
Close

1.5 Startup

To start up Multi Data Viewer, click the shortcut icon on the Windows desktop. Alternatively, click "Multi Data Viewer Ver.1.*.*" or "Setting Manager Ver.1.*.*" after selecting "All programs" - "OMRON" - "Multi Data Viewer" from the Windows start menu.



1.6 Uninstallation

To uninstall Multi Data Viewer, click "Add or Remove Programs" (Windows XP) or "Uninstall or Change Program" (Windows Vista or 7) in the Windows Control Panel.

2. Setting/Logging Tool: Setting Manager

2.1 Setting Manager

Setting Manager is a PC tool used for set and operate EQUO devices as well as collect/log measured values.

The user can use the tool for the following procedures:

Setting	・Device parameter settings ・Logging target channel setting in each device ・Data type setting ・ Connected Device Settings when a wireless unit is used(*) *: Wireless Unit is available only in Japan.
Operation/Status Acquisition	・Operation of certain devices ・Device status acquisition
Collection/Logging of Measured Values from Devices	・Collecting/logging measured values from devices and outputting them to CSV files

Definition

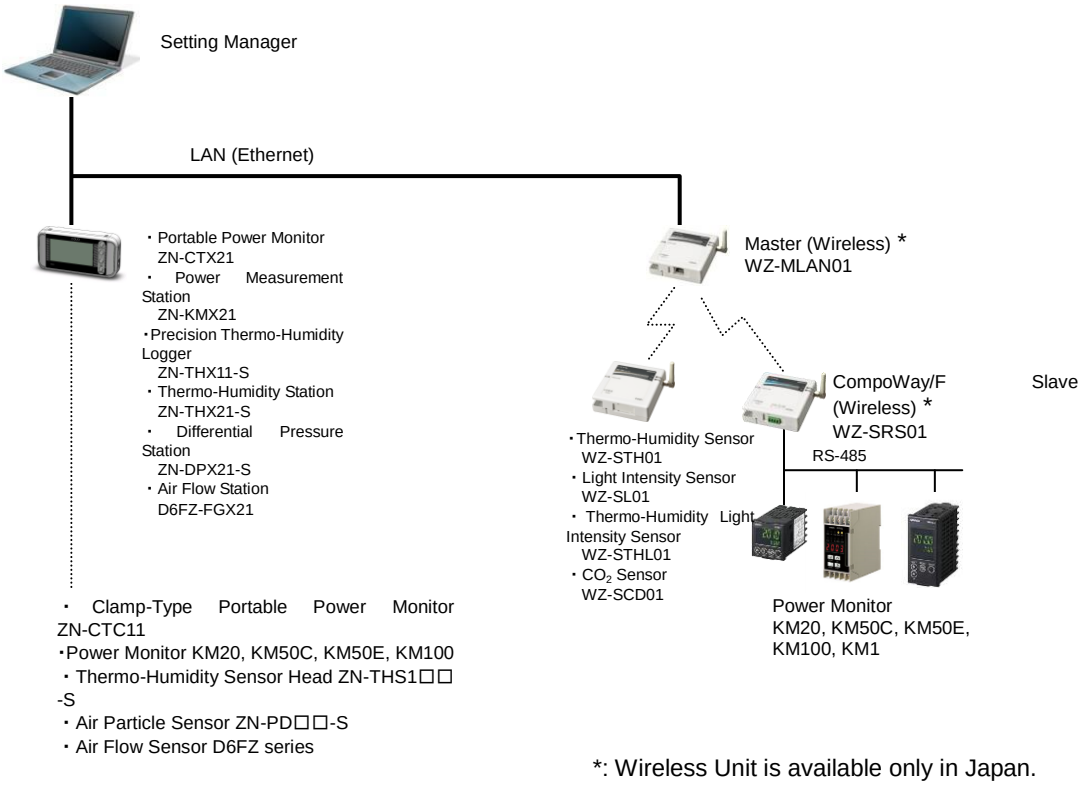
"EQUO devices": The generic name for OMRON's environmental sensing devices to measure/quantify energy data: electric power and air flow rate values as well as quality/ambient condition-related data: temperature/humidity, differential pressure, amount of foreign matter, light intensity and CO_2 values. The devices are specifically designed to optimally balance between the energy consumption and quality, pertaining to facilities.

The term "devices" in Setting Manager refers to EQUO devices.

This manual also uses "devices" to designate the same in Setting Manager operation or other descriptions.

2.1.1 Setting Manager System Configuration

The following figure shows the Setting Manager system configuration.



*: Wireless Unit is available only in Japan.

2.2 Setting Manager Specifications

The following shows the Setting Manager specifications.

Item			Description
Logger setting	Device Settings		Logging target device setting and recording interval setting for each device
	Channel Settings		Setting each device's individual measurement channels as logging targets and displaying each measurement channel setting status
	Connected Device Settings		Wireless device settings for wireless communications (when used) between the PC (running Setting Manager) and devices
Device parameter setting			Parameter setting for devices
Export of settings			Device setting, device connection, sensor setting and data type setting can be exported individually in CSV format
Import of settings			Device connection, sensor setting and data type setting can be imported individually from CSV format
Operation/Status acquisition			・Device operation (Logging start/stop on the device unit, SD memory card write, alarm/error cancel, clock adjustment and restart are possible) ・Device status monitoring (Logging in process, error, etc.)
Logger	Operation		・Test to check the connection to EQUO devices ・Project write to the logger ・Measured value acquisition from EQUO devices and start/stop logging
	Recording interval	ZN series	1, 2, 5, 10, 20, 30 s 1, 2, 5, 10, 20, 30 min, 1 h
		WZ series	1, 5, 10 min
		CompoWay/F slave connection	1, 2, 5, 10, 20, 30 min, 1 h
	Output		Logging data output to CSV files
CSV files that can be saved			・Logging data ・Device unit settings ・Sensor settings (for data collection devices) ・Data type settings

2.3 Setting Manager Basic Operation Flow

The following shows the basic flow of Setting Manager operation.

Procedure	Reference
Create a new project	2.8.1 Creating a New Project
↓	
Specify CSV file save destination	2.9.2 Making Project Settings
↓	
Make device settings Specify device parameters Make logging settings (e.g. logging interval)	2.9.3 Setting Devices
↓	
Register wireless communications units	2.9.5 Setting Connection Units (For Wireless Connection)
↓	
Specify measurement channels	2.9.4 Setting Channels
↓	
Specify data type	2.9.4 Setting Channels
↓	
Save the project	2.8.3 Saving a Project
↓	
Connect Setting Manager online	2.10.1 Connecting Setting Manager Online
↓	
Write the settings in the logger	2.10.2 Writing Settings in Loggers
↓	
Test connection (as required)	2.10.3 Starting/Ending Connection Test
↓	
Start Logging	2.10.4 Starting Logging
↓	
Stop logging	2.10.5 Stopping Logging
↓	
Use logging data	3.5.1 Using Logging Data Collected by Setting Manager Logger

2.4 Setting Manager Operation Quick Reference Guide

The following shows the operation procedure for individual Setting Manager functions.

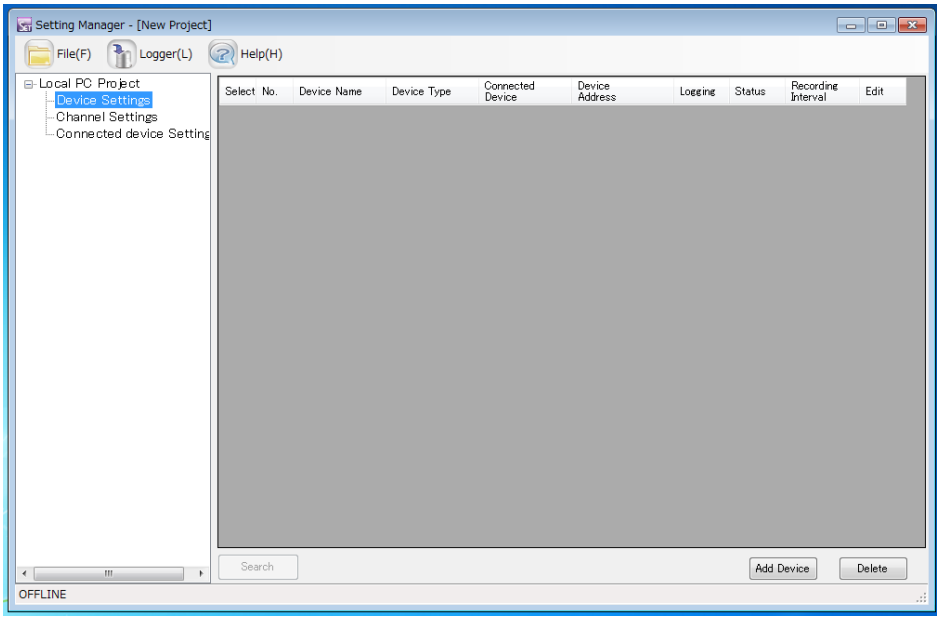
Function (What to do)		Operation (How to do)	
Device Settings	Register a device	Use the device list in "Device Settings" in the setting menu area	・Add a device offline: "Add Device" button ・Search a device and add it online: "Searching device" - "Add " button
	Specify the device name, connection unit and IP address of each device		1. Click the "Add Device" button 2. Specify "Name", "Device type", "Connecting to:", "IP address" and" Connected Numbers: " in the "Add Device" dialog box
	Specify if each device is a logging target		Select the targets in the "Logging" list
	Specify the logging interval for each device		1. Click the "Add Device" button 2. Select "Recording Interval" in the "Add Device" dialog box
	Specify device unit parameters		1. Click the "Edit" button 2. Use "Device Settings" in the "Edit Device" dialog box
	Change a device name, connection unit, IP address and recording interval		1. Click the "Edit" button 2. Use "Connecting Information" in the "Edit Device" dialog box
	Change the parameters of the sensor connected to a data collection unit		1. Click the "Edit" button 2. Click the "Edit" button in "Sensor Settings" in the "Edit Device" dialog box 3. Change the parameters in the "Sensor Settings" dialog box
	Read parameters from a CSV file		Click the "Import Settings" button
Connected Device Settings (When wireless connection is used)	Make necessary settings to connect the PC (with Setting Manager) to EQUO devices via wireless unit (Specify the unit configuration in the communication path)	Use the Connected Device List in "Connected Device Settings" in the setting menu area	1. Click the "Add Ch." button 2. Register "Wireless master" or "Wireless CompoWay /F slave" (RS-485 slave)
Channel Settings	Add a measurement channel as a logging target	Use the channel list in "Channel Settings" in the setting menu area	Click the " Add Ch." button
Logging	Test (Online connection test)	Use the "Logger" menu in the setting menu area	1. Click "Online Connection" 2. Click "Start Test" 3. Check the result in "Status" in "Device Settings" in the setting menu area
	Start Logging	Use the "Logger" menu	1. Click "Online Connection" 2. Click "Start Logging"

Function (What to do)		Operation (How to do)	
			Note 1: Specify the logging targets by selecting "Valid" or "Invalid" for each device in the “Device Settings” device list. Note 2: Specify the logging interval by specifying “Recording Interval” in the "Add Device" dialog box.
Device status acquisition	Check the status of each device during connection test or logging process	Use the device list in “Device Settings” in the setting menu area	See the "Status" column
Device operation	Operate a ZN series device e.g. to start/stop logging or eject the SD memory card	Use the device list in “Device Settings” in the setting menu area	1. Click the "Edit" button 2. Use "Device operation" in the “Edit Device” dialog box
Setting output in CSV format	Save device parameters in a CSV file	Use the device list in “Device Settings” in the setting menu area	1. Click the "Edit" button 2. Click the "Export setting" button in “Device Settings” in the “Edit Device” dialog box
	Save sensor parameters in a CSV file		1. Click the "Edit" button 2. Click the "Edit" button in “Sensor Settings” in the “Edit Device” dialog box 3. Change the parameters in the “Sensor Settings” dialog box 4. Click the "Export setting" button

2.5 Starting/Exiting Setting Manager

2.5.1 Starting Setting Manager

Select "Tool" - "Logging" on Multi Data Viewer or "All programs" - "OMRON" - "Multi Data Viewer" - "Setting Manager" from the Windows start button.
The Setting Manager main window appears.

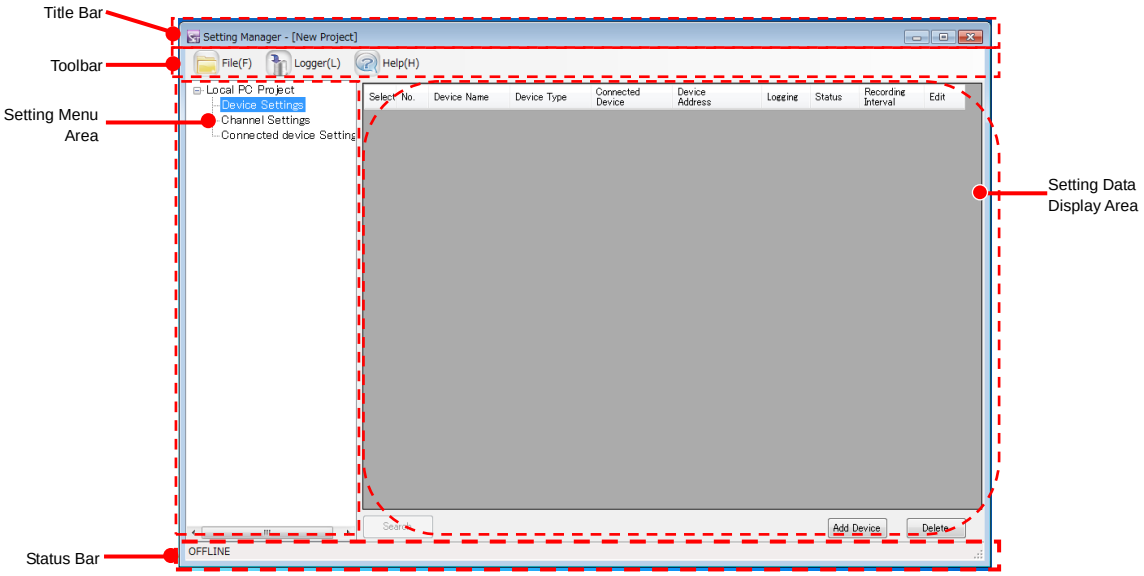


2.5.2 Exiting Setting Manager

Click the "Exit" button ( ) in the File (F) menu to exit Setting Manager.
A confirmation message appears if changes added to the project loaded on the PC has not been saved in the project file.

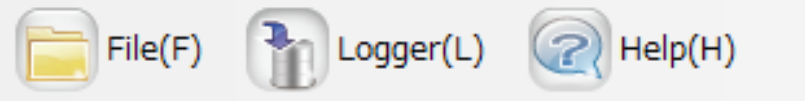
2.6 Setting Manager Window Configuration

The following shows the Setting Manager window.



Section name	Description
Title bar	Setting Manager - <Project file name>
Toolbar	Shows the icons to access individual functions. Click the icon to execute the corresponding function.
Setting menu area	The followings are shown under the project name. ・Device Settings ・Channel Settings ・Connected Device Settings
Setting data display area	Select any of the setting items above to display the corresponding setting data.
Status bar	Shows the Setting Manager current status or process progress.

2.6.1 Setting Manager Toolbar Functions



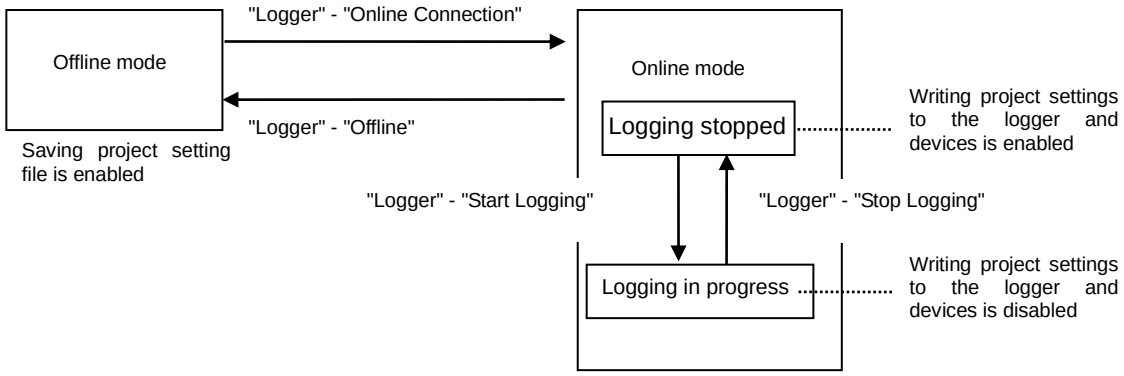
The Setting Manager toolbar comprises "File", "Logger" and "Help" items, which provides the following functions.

Menu Item	Function	Description
File	Provides the functions to create, save or read a project as well as exit Setting Manager.	
	New Project	Creates a new project based on the settings.
	Open	Reads a saved project to Setting Manager.
	Close	Closes the project.
	Save as	Saves a project after settings in a file.
	Exit	Exits Setting Manager.
Logger	Provides logger operation functions.	
	Online Connection	Switches Setting Manager from the offline to online mode. The logger function and communications with connected devices are enabled.
	Offline	Switches Setting Manager from the online to offline mode. The logger function and communications with connected devices are disabled.
	Start Logging	Starts logging by acquiring the measured values at the specified device channels.
	Stop Logging	Stops logging.
	Start Test	Starts the connection test between the logger and devices. The connection status is shown in "Status" in “Device Settings” in the setting menu area.
	End Test	Stops the connection test in progress.
	Save Settings	Saves the following settings made with Setting Manager: ・Logger settings to the logger ・Device parameter settings to the connected devices Via communications
	Read Settings	Reads logger settings to a project loaded on Setting Manager.
Help	Version Information	Shows the version of Setting Manager.

2.7 Acquiring Device Status

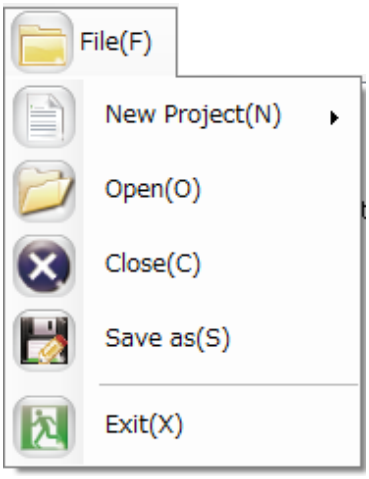
The following device status information can be acquired using Setting Manager:

Status	Logger function	Communications with device	Logging
Online mode	Enabled	Enabled	Stopped
			In progress
Offline mode	Disabled	Disabled	Disabled


Offline mode
"Logger" - "Online Connection"
"Logger" - "Offline"
Saving project setting file is enabled
Online mode
Logging stopped
Writing project settings to the logger and devices is enabled
"Logger" - "Start Logging"
"Logger" - "Stop Logging"
Logging in progress
Writing project settings to the logger and devices is disabled

2.8 Creating/Saving a Setting Manager Project

Click the corresponding icon in the "File (F)" menu to create a new project, save or read a created project file.



2.8.1 Creating a New Project

Click the "New Project(N)" icon in the "File (F)" menu on the toolbar to create a new project.

2.8.2 Opening/Closing a Project

Click the "Open(O)" icon in the "File (F)" menu on the toolbar to read a saved project to Setting Manager.

2.8.3 Saving a Project

Click the "Save as(S)" icon in the "File (F)" menu on the toolbar to save a project in a file.
The save destination selection window appears. Specify the destination folder and file name, then click "OK".

2.8.4 Exiting Setting Manager

Click the "Exit(X)" button ( ) in the File (F) menu on the toolbar to exit Setting Manager. The confirmation message appears if project file data is modified.

2.9 Settings (Setting Menu Area)

Setting Manager allows the user to make EQUO system settings such as various device setting, logging and wireless connection settings from the setting menu area.

*: Wireless Unit is available only in Japan.

2.9.1 Functions in Setting Menu Area

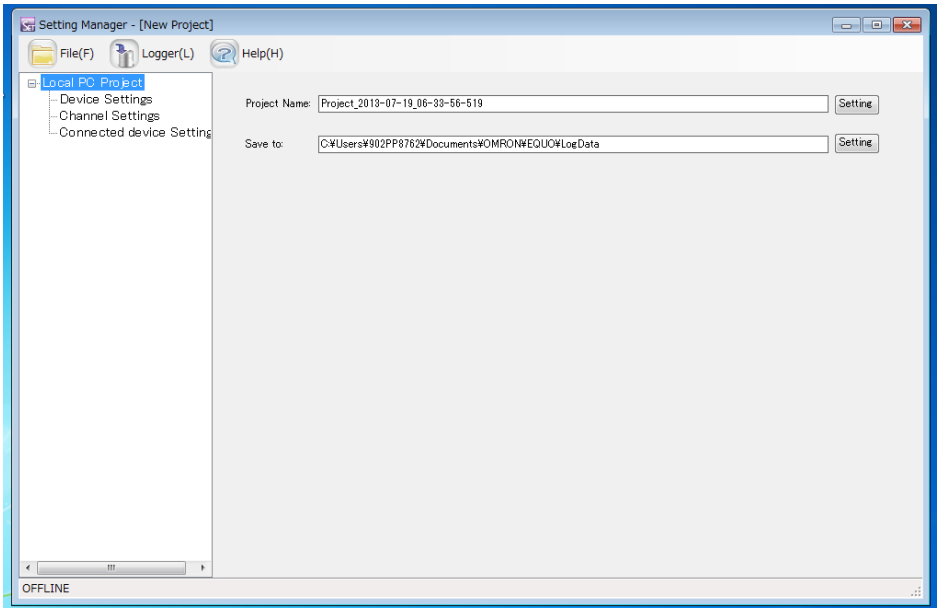
The setting menu area provides the access to the following setting functions.

The setting data display area shows the corresponding setting data when a menu item is selected.

Project (Local PC project)		Make project settings here. Specify the project name and setting data (CSV file) save destination.	
	Device Settings	Make settings for the devices connected to the Setting Manager logger function.	
		Device list	Lists the connected device information: device names, types, connection types, connection addresses, logging Valid/Invalid settings, connection statuses and logging intervals. The list can be edited.
		Sensor setting	Use this to make the sensor parameter settings for devices or KM series units connected to the devices as well as operate the devices and units.
	Channel Settings	Register device measurement channels as the logging targets and check their setting status.	
		Channel list	Lists the connected device channel information: channel names, device names, data types, and the logging target settings for individual channels of each connected device. The channel names can be edited.
	Connected Device Settings	Make settings for the connection units (i.e. wireless master and slaves) configured in the communication path from the PC (with Setting Manager) to the devices, when using wireless connection.	
		Connected Device List	Lists the connection unit names, unit types, connection targets, and connection IP addresses. The list can be edited.

2.9.2 Creating/Saving a Setting Manager Project Making Project Settings

Click a desired project name in the setting menu area to make settings for the project.

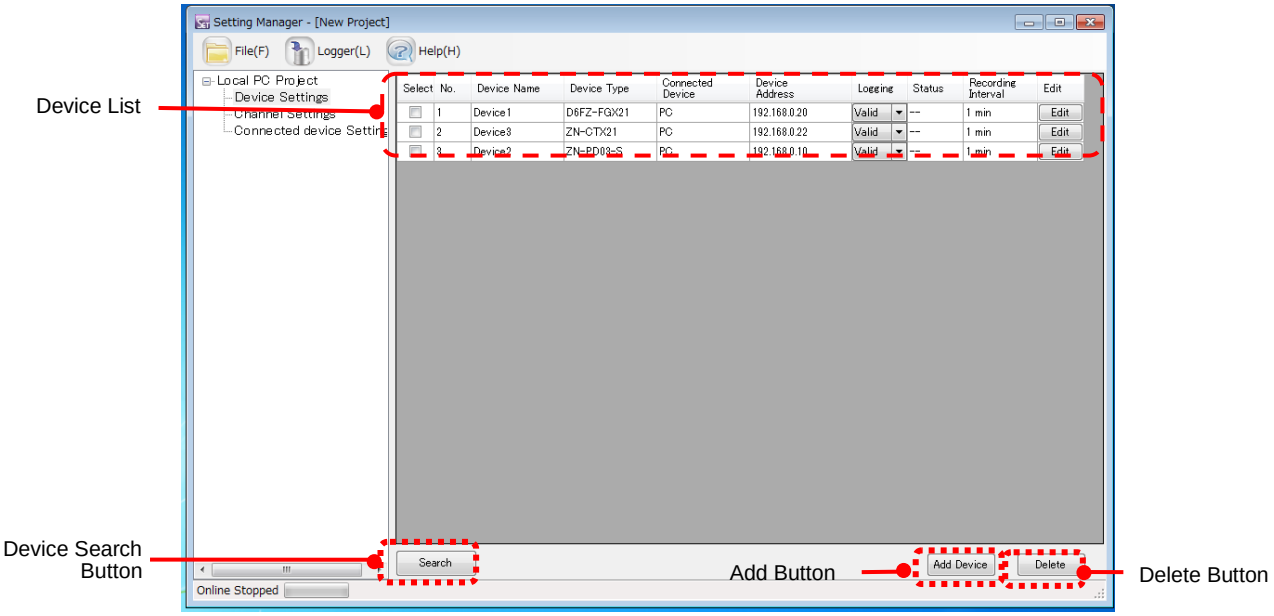


The project setting window provides the settings of two items: "Project Name" and "Save to".

Item	Description
Project Name:	Enter the name for the currently open project. Setting Manager refers to this project name when writing data to the logger.
Save to:	Specify the CSV file save destination folder. The following data can be saved in CSV format: ・Logging data ・Data type settings ・Device unit settings ・Sensor settings (for data collection devices) Enter the data save destination folder name or click the [Setting] button to select the folder.

2.9.3 Setting Devices

Click “Device Settings” in the setting menu area to make device settings.
The settings for individual devices including those connected to the Setting Manager logger function are available with this menu item.



"Device List" displays the connected device information as shown below:

Item	Description
Select	The devices with the corresponding checkboxes selected (☑) can be deleted in batch.
No.	The number is assigned in the order the device is registered by the user.
Device Name	Shows the device label added by the user.
Device Type	Shows the device type name.
Connected Device	Shows the name of the unit the device is connected.
Device address	Shows the connection address of the connection unit the device is connected to. ・LAN (Ethernet) connection: IP address ・Wireless master connection: Slave unit ID ・Wireless/RS-485 connection: CompoWay/F unit ID ・LAN/RS-485 connection: CompoWay/F unit ID
Logging	Shows if logging is from the device is Valid/Invalid. Valid: Logging target Invalid: Not a logging target. Setting Manager does not log the data of the device with this setting. This setting cannot be changed during connection test or logging process.
Status	Shows the device connection status. Updates the status every minute while connection test or logging is in progress. The status is shown in any of the following indications: "--": The setting tool has not acquired the status from the logger. "OK": The device is ready for data acquisition. "Error": An error has occurred in the device unit. "Connection Error ": It is not connected with the device.
Recording Interval	Shows the interval in which measured values are collected from the

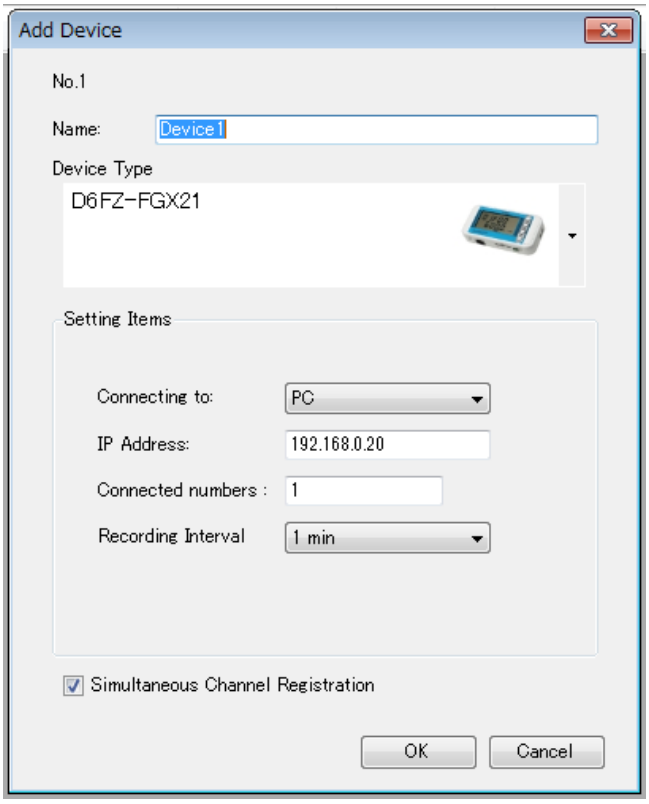
Item	Description
	device.
Edit	Use this to edit the device. Clicking the button displays the device editing window.

Click the “Search” button to search devices to connect to the logger, among those connected to the connection units.
Click the "Add Device" button to add a device to connect to the logger function.
Click the "Delete" button to delete the connected devices selected in the list.

(1) Adding a Device

[1] Adding a Device Offline

The user can add a device to the logger function by clicking the "Add Device" button.



Click the "OK" button to add the device with the settings made in the dialog box.
Clicking the "Cancel" button aborts the settings and closes the window.

The “Add Device” dialog box provides the following setting items:

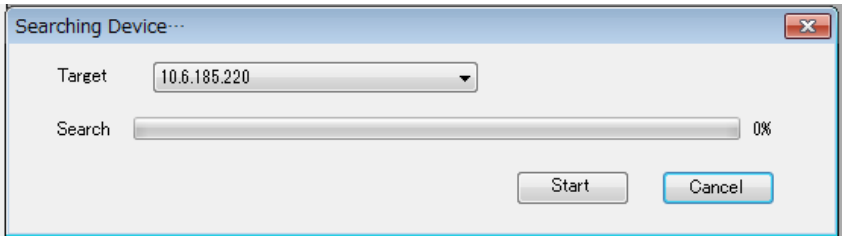
Item	Description
Name	Enter a user-defined name for the device.
Device Type	Select the type of the device in the device type list displayed in the window.
Setting Items	The settable items vary depending on the device type selected in the device type selection box.
Simultaneous Channel Registration	Select this checkbox to register the channels specified for the device. Both the device and channels are registered at once.

The following table shows the setting items that can be specified for individual options in the device type selection box.

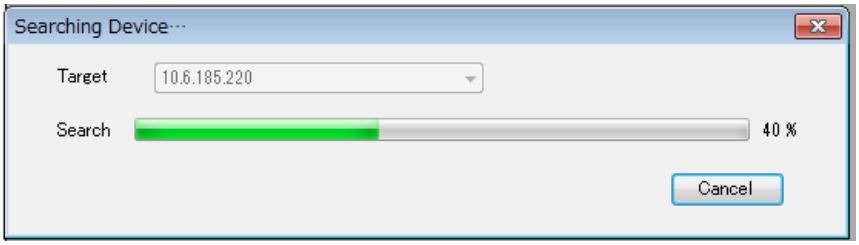
Device type selection box	Connection unit selection box	Setting items (Setting data display area)
ZN-PD03-S/ZN-PD50-S ZN-THX21-S ZN-DPX21-S ZN-CTX21 ZN-KMX21 D6FZ-FGX21	PC	Connection device, IP address, Recording interval, and the number of connections (ZN-KMX21, D6FZ-FGX21) With/Without ZN-TH11-S (ZN-PD03-S/ZN-PD50-S)
WZ-STH01 WZ-SL01 WZ-STHL01 WZ-SCD01	Wireless master name	Connection device, Wireless unit ID, Recording interval, and Timeout
KM20-B40 KM50-E KM50-C KM-100 KM1-PMU2A KM1-PMU1A KE1-CTD8E KM1-EMU8A ZN-PD03-S ZN-PD50-S	Wireless slave name	Connection device, CompoWay/F unit ID, and Recording interval
	CompoWay/F adapter name	Connection unit, CompoWay/F unit ID, and Recording interval

[2] Searching Devices Online

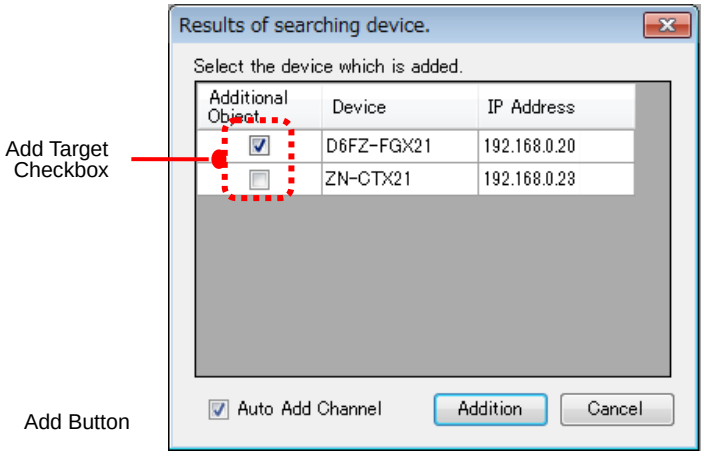
Setting Manager automatically searches devices to connect to the logger function at a click of the “Search” button. Currently, a search is only possible with sensors connected to the PC.



Check the search target and click the "Start" button.



The device search progress is shown at the progress bar. To cancel the search, click the "Cancel" button.
The found devices are listed in the "Device search result" dialog box when a device search is completed.



Select the corresponding "Add Target" checkboxes (☑) of the devices to add, and click the "Add" button. The selected devices are registered.
Select the "Simultaneous Channel Registration" checkbox (☑) to register the channels specified for the devices. Both the devices and channels are registered at once.

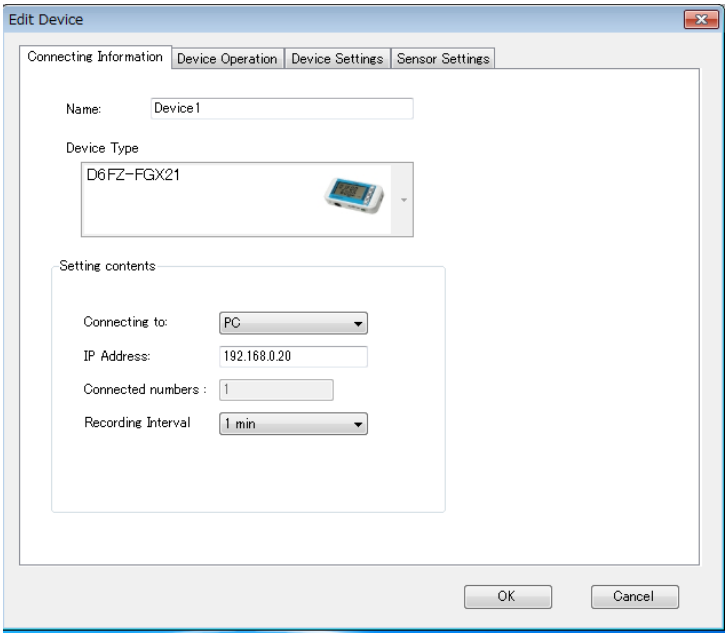
(2) Editing a Device

The user can edit a device by selecting the device in "Device List" and clicking the "Edit" button. The setting data of the device connected to the logger function can be modified.
The “Edit Device” window provides different tab configuration depending on the device type.
The following table shows the tab configurations for individual device types shown in the “Edit Device” window.

Device Type	Connecting information	Device Operation	Device Settings	Sensor setting
ZN-PD03-S ZN-PD50-S	Yes	Yes	No	No
ZN-THX21-S ZN-DPX21-S ZN-CTX21	Yes	Yes	Yes	×
ZN-KMX21 ZN-FGX21	Yes	Yes	Yes	Yes
WZ-STH01 WZ-SL01 WZ-STHL01 WZ-SCD01	Yes	No	No	No
KM20-B40 KM50-E KM50-C KM-100	Yes	No	Yes	No
KM1-PMU2A KM1-PMU1A KE1-CTD8E KM1-EMU8A ZN-PD03-S ZN-PD50-S	Yes	No	No	No

[1] Connecting Information Tab

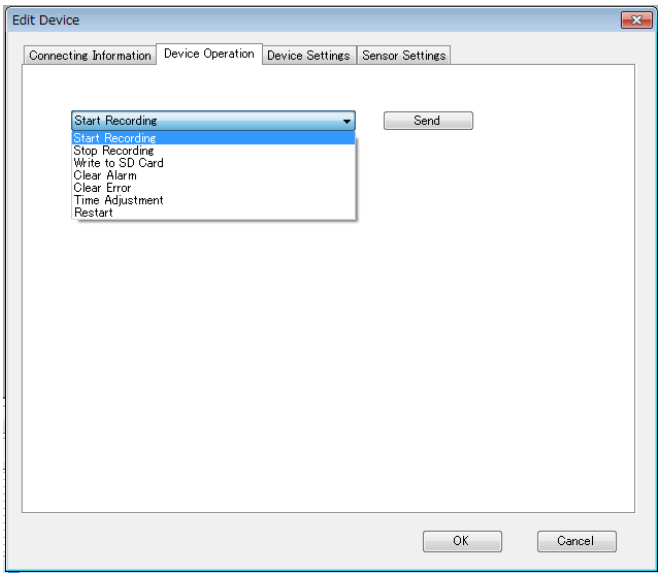
The tab displays the information on the connection between Setting Manager and devices.



Click the "OK" button to register the device with the settings made in the tab.
Clicking the "Cancel" button aborts the settings and closes the window.

[2] Device Operation Tab

Use this tab to send operation commands to the device.



Select the command and click the "Send" button to send the command to the device. Refer to the device manual for the details of device operation commands.

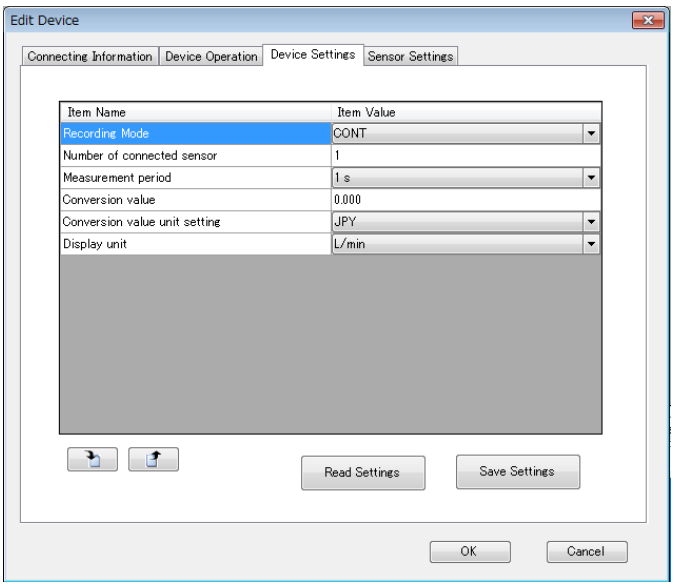
Important

When saving the settings, stop recording the data by the connected device. If the device is in Recording, choose “Stop Recording” in the “Device Operating Tab” and stop recording.
When failed to read / save settings, error message is displayed. In that case, make sure the following status:

- Make sure the device is ON and the recording status.
- Make sure the LAN connection status between PC and the connected devices
- Make sure the LAN settings.

[3] Device Settings Tab

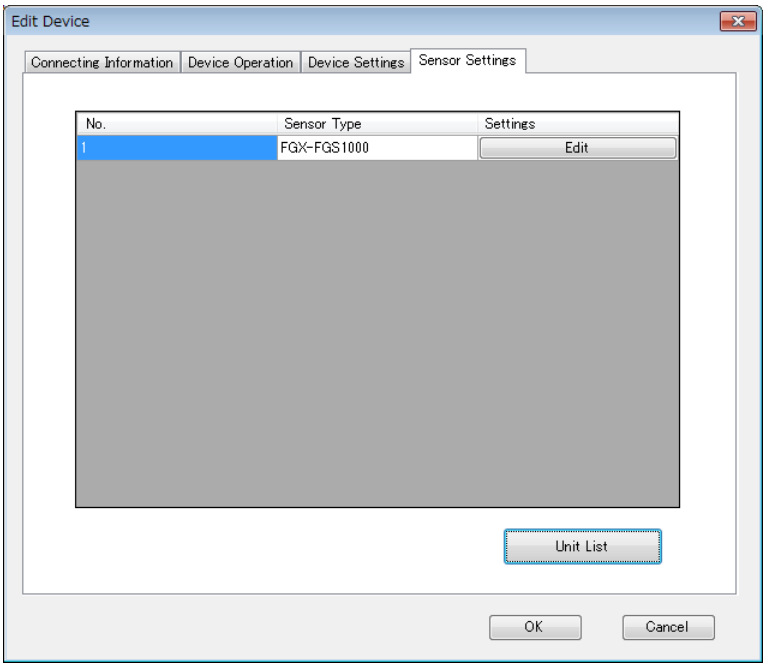
This tab provides the editing of the device unit parameters.



button: Click this to update the parameters with the setting data read from a CSV file.
button: Click this to output the settings to a CSV file.
Click the "Read setting" button to read the set values to Setting Manager from the device to update them.
Click the "Save setting" button to save the settings to the device.
Click the "OK" button to register the device with the settings made in the tab.
Clicking the "Cancel" button aborts the settings and closes the window.
The device must not be in the recording process when writing the setting to the device.
Stop the recording in "Device operation" if the device is in the process of recording.

[4] Sensor Settings Tab

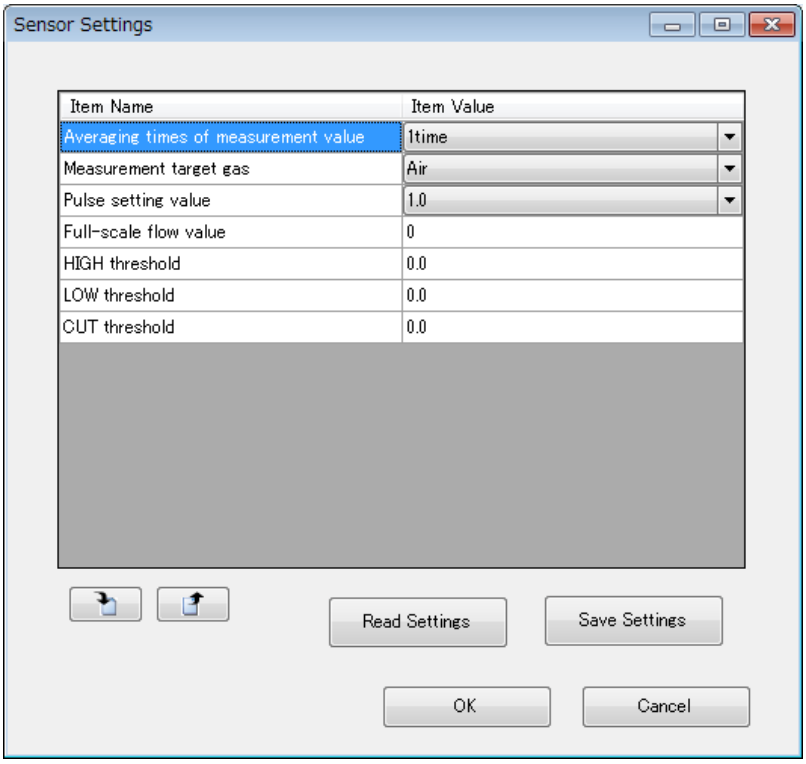
The parameter editing for the connected sensors is available with some data devices.
This tab allows the user to make settings for the sensor connected to the corresponding data collecting device.
Click the "Unit List" button to display the sensor list for the setting.



The Sensor setting tab provides the following setting items:

Item	Description
No.	The sensors are listed in the order from the smallest unit number (1, 2, 3…).
Sensor Type	Shows the sensor type or model.
Settings	The sensor setting dialog box appears when the "Edit" button is clicked.

At a click of the "Sensor List" button, Setting Manager communicates with devices to check and display the connected sensors.
The sensor setting dialog box appears when the "Edit" button is clicked.



Use the “Sensor Settings” window to make settings for the selected sensor.

The lower setting items vary depending on the sensor type.

button: Click this to update the parameters with the setting data read from a CSV file.

button: Click this to output the settings to a CSV file.

Click the "Read setting" button to read the set values to Setting Manager from the device to update them.

Click the “Save settings” button to save the settings to the device.

Click the "OK" button to register the device with the settings made in the tab.

Clicking the "Cancel" button aborts the settings and closes the window.

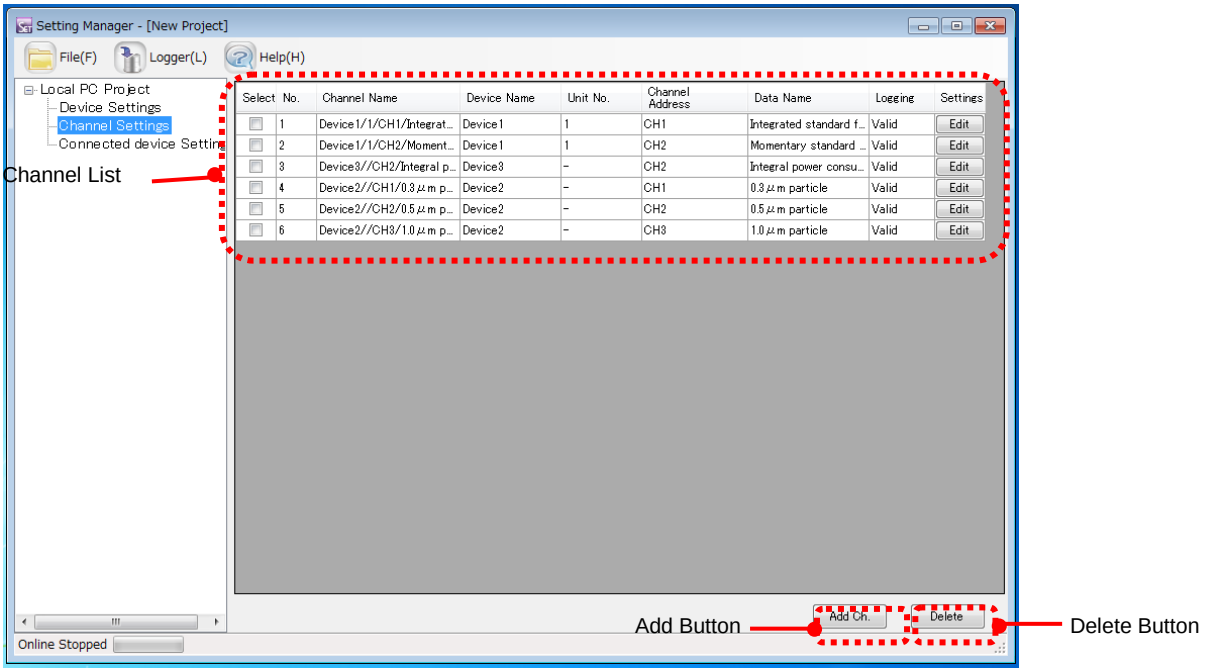
The device must not be in the recording process when reading or writing the setting from/to the device. Stop the recording in "Device operation" if the device is in the process of recording.

(3) Deleting Devices

Click the "Delete" button to delete the connected devices selected (☑) in the list.

2.9.4 Setting Channels

The user can add or delete individual device measurement channels to/from the logging target selection by clicking "Channel Settings" in the setting menu area. The displayed data also can be used to check the current settings made to each channel.



The Setting data display area shows the channel setting information.
The following items are displayed in the area.

Item	Description
Select	Use the checkboxes to operate the selected devices in batch.
No.	The number is assigned in the order the channel is created by the user.
Channel Name	Shows the label given to the channel by the user.
Device name	Shows the label given to the device by the user. A channel without the device information (e.g. when using a local file) is displayed as "--".
Data name	Shows the data type of the physical quantity values measured by the device.
Logging	Either of the following settings is displayed depending on if the device containing the channel is specified as a logging target. "Valid": Logging target "Invalid": Not a logging target Specify the above setting for each device in the "Logging" column in “Device Settings”.
Setting	Shows the "Edit" button. Click this to edit the name of the corresponding channel.

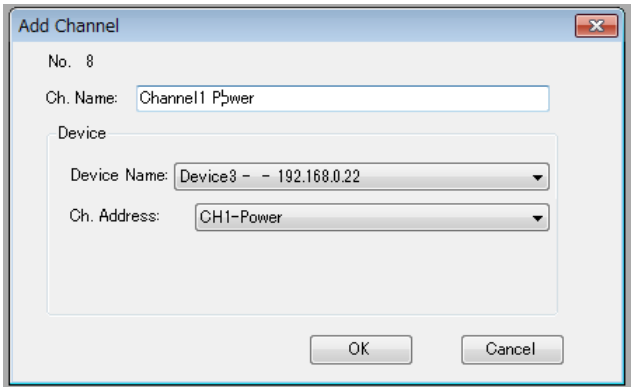
Click the "Add Ch." button to display the "Add Channel" dialog box and add a channel retained by the device but not registered yet.
Click the "Delete" button to remove the selected channels from the logging target selection.

(1) Adding a Channel

At a click of the "Add Ch." button, the "Add Channel" dialog box appears.
The dialog box allows the user to register a channel retained by the device but not yet registered to Setting Manager.

The following shows the items available with the dialog box.

Item	Description
Ch. Name	Enter the name for the channel to register.
Device Name	Select the corresponding device in the pull-down list. The devices registered in “Device Settings” are shown in the list in the "Device name - Device address" format.
Ch. Address	Select the channel to register in the pull-down list. The channels contained in the device are shown in the list in the "CH number - Data type" format.



Click the "OK" button to register the channel with the settings made in the dialog box.
Clicking the "Cancel" button aborts the settings and closes the window.

(2) Deleting Channels

Select the checkboxes (☑) for the channels to delete in "Channel list" and click the "Delete" button. The selected channels are removed from the logging target selection.

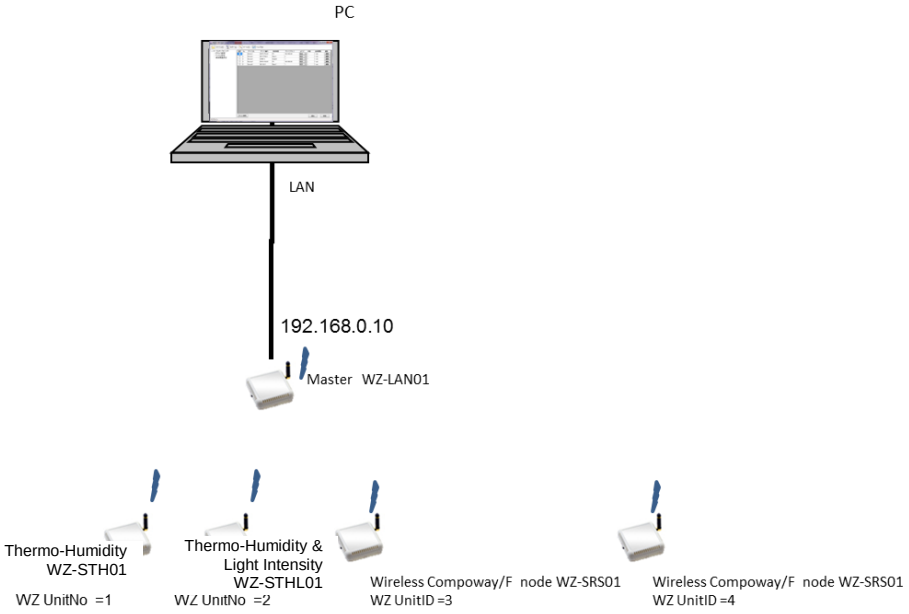
(3) Editing a Channel

Click the "Edit" button shown in "Channel list". The "Edit channel" dialog box appears.
The dialog box allows the user to edit the setting for a registered channel.
The Edit channel dialog box can be operated in the same way as the "Add channel" dialog box. Refer to "(1) Adding a Channel" for details.

2.9.5 Setting Connection Units (For Wireless Connection)

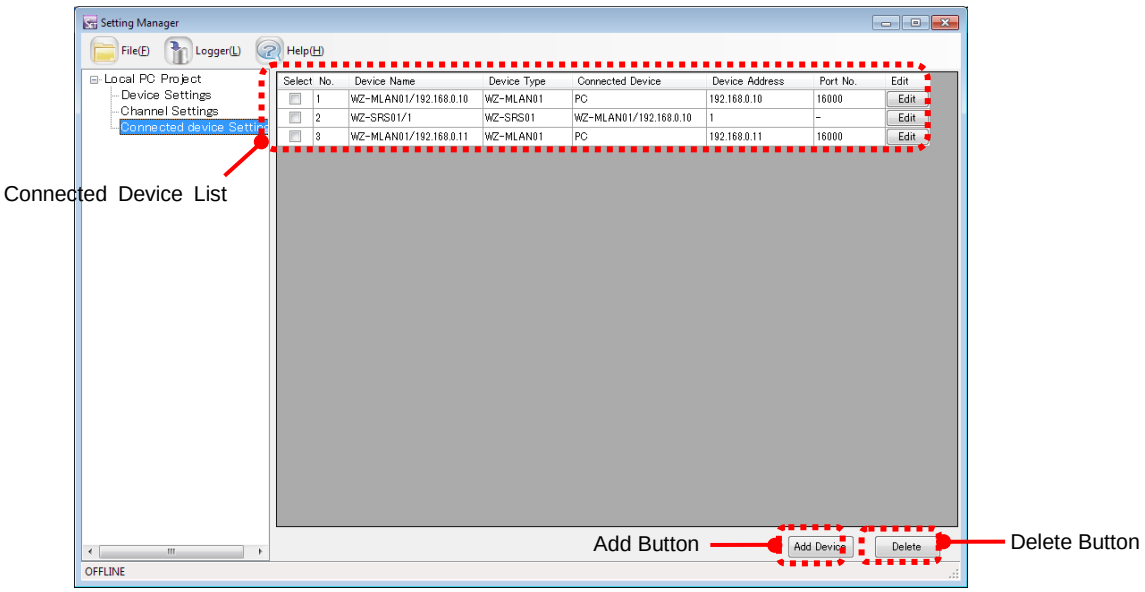
The "Connected Device Settings" is enabled if Setting Manager is connected to devices via wireless. Click this button to make settings for the connection units (Wireless master and CompoWay/F wireless slaves) configured in the communications path between the PC (Setting Manager) and devices.

*: Wireless Unit is available only in Japan.



For example, a wireless master and two CompoWay/F slave units must be registered in the system configuration above.

The Setting data display area shows “Connected Device List”.
The Connected Device List displays the settings related to the connection units.



The following items are displayed in the area.

Item	Description
Select	The column displays the "Select" checkboxes used to delete multiple connection units in batch. Select the checkboxes for the units to delete and click the "Delete" button.
No.	The number is assigned in the order the unit is registered by the user.
Device Name	Shows the label given to the connection unit by the user.
Device Type	Shows the type of the connection unit.
Connecting to	Shows the unit name the connection unit is connected to. PC/Wireless master name
Connection Address	Shows the address of the upper connection unit each connection unit (in the Connection unit column) is connected to.
Edit	Clicking the "Edit" button displays the "Edit connection unit" dialog. The user can edit the unit name and type, connected unit and its address for the registered connection units.

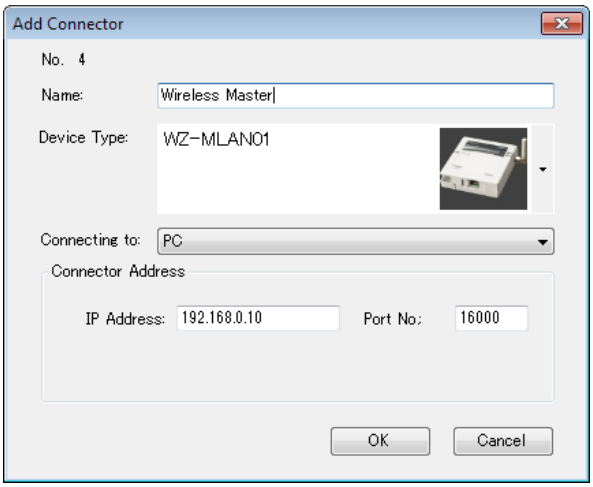
Click the "Add Device" button to display the “Add Connector” dialog box, in which the user can register a new connection unit.

Click the "Delete" button to remove the selected connection units from the connection selection.

(1) Adding a Connection Unit

The user can add a connection unit to the EQUO system controlled by the logger.

Click the "Add" button. The "Add Connector" dialog box appears.



The dialog box provides the following items to specify for the connection unit to add:

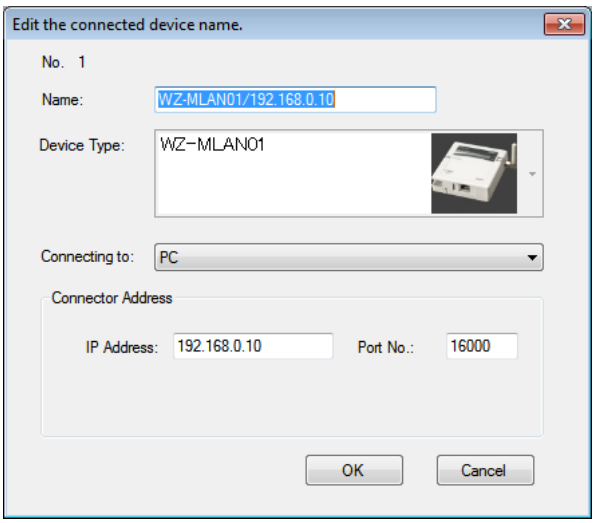
Item	Description
Name	Enter a user-defined name for the connection device.
Connection unit type	Shows a list of connection unit types. Wireless master (WZ-MLAN01) / CompoWay/F wireless slave (WZ-SRS01)
Upper connection unit	Select the unit name the added connection unit is connected to. The options change depending on the connection unit type.
Connector Address	Enter the address the connection unit selected in the connection unit selection box is connected to. The display changes depending on the connection unit type.

Click the "OK" button to add the connection unit with the settings made in the dialog box.
Clicking the "Cancel" button aborts the settings and closes the window.

(2) Editing Connected Device Settings

Select the unit in the “Connected Device List” and click the "Edit" button. The user can edit the registered upper connection unit and connection address for the selected connection unit.

The "Edit Connector" dialog box appears.



The dialog box allows the user to edit the following data registered for the connection unit.

Item	Description
Connecting to:	Select the unit name the connection unit is connected to. The options change depending on the connection unit type.
Connector Address	Enter the address the connection unit selected in the connection unit selection box is connected to. The display changes depending on the connection unit type.

Click the "OK" button to update the Connected Device Settings to those made in the dialog box.
Clicking the "Cancel" button aborts the settings and closes the window.

2.10 Logging (Logger Menu)

Setting Manager collects measured values from the registered devices and log them in a specified folder in CSV format.

2.10.1 Connecting Setting Manager Online

Make sure that a project is open and more than one device is registered in the project, then click "Online Connection" in the "Logger (L)" menu. Setting Manager changes from offline to online mode.
The logger function and communications with the connected devices are enabled once Setting Manager becomes online.
When failed to “Online Connection”, the error message is displayed. In that case, restart the PC and Setting Manager.

2.10.2 Saving Settings in Loggers

Click “Save Settings” in the "Logger (L)" menu in the toolbar while Setting Manager is online. The project settings made with Setting Manager are written to the connected devices through communications.
Saving logger settings (device parameters) to the logger function (connected devices) through communications is required to enable the connection test based on the "logger settings" and logging. Setting Manager cannot start logging unless this process is completed.

2.10.3 Starting/Ending Connection Test

Click "Start Test" in the "Logger (L)" menu in the toolbar while Setting Manager is online. Setting Manager starts connection test while showing the progress in the status bar.

The test result is shown at the "Status" row in “Device Settings” in the setting menu area as the following:

"Status" row	Status
"--"	The setting tool has not acquired the status from the logger.
"Normal"	The device is ready for data acquisition.
"Connection Error"	The device is not ready for data acquisition.
"Error"	An error has occurred in the device unit or the unit is in either of through mode and FTP mode.

Setting Manager exits connection test anytime when "Stop Test" in the "Logger (L)" menu is clicked. The progress display in the status bar disappears and "--" is shown at the "Status" row in “Device Settings”.

2.10.4 Starting Logging

Click "Start Logging" in the "Logger (L)" menu in the toolbar while Setting Manager is online. Setting Manager starts logging by using the logger function to collect measured values from the connected devices.

The logging data is saved in CSV files in the folder specified in "Save to" during the project setting procedure. Refer to "**2.9.2 Creating/Saving a Setting Manager Project Making Project Settings**" for the data save destination.

If "Start Logging" is clicked during the process of connection test, Setting Manager stops the test.

2.10.5 Stopping Logging

Click "Stop Logging" in the "Logger (L)" menu to stop logging.

2.10.6 Reading Settings from Loggers

Click "Read Settings" in the "Logger (L)" menu while Setting Manager is online. The logger settings for the connected devices can be read to the project on Setting Manager.

2.10.7 Disconnecting Setting Manager (Offline)

Click "Offline" in the "Logger (L)" menu while Setting Manager is online. The logger function and communications with connected devices are disabled.

2.11 Other Setting Manager Operation

2.11.1 Displaying Setting Manager Version and Copyright Information (Help Menu)

Click "Version" in the "Help" menu. The Setting Manager version and copyright information is displayed.

3. Summary/Display Tool: Multi Data Viewer

3.1 Multi Data Viewer

Multi Data Viewer is used to summarize and display the logged EQUO device measurement data for analysis.
The tool can support optimal operation by balancing the energy consumption and product quality through the integrated quantification of environmental data such as power consumption, flow rate, temperature and amount of foreign matter.

Multi Data Viewer provides the summary and integrated graph display of logging data collected at a specified period, summary unit and measurement time/date, which is obtained in either of the following methods:

- EQUO devices log the data, which is saved in a memory device (e.g. SD memory card)
- The logger function in Setting Manager directly collects the logging data from EQUO devices through communications

Note

- Multi Data Viewer can display momentary values if summary by the summary unit is not required. Previous environmental data or the data from different measurement points also can be compared and displayed.

Definition

- "Logging data" refers to any of the following data:
  (1) Logging data collected by EQUO devices at specified logging intervals
  (2) Logging data collected by the Setting Manager logger function directly from EQUO devices through communications at specified logging intervals
  All the data above is output in CSV files and the output files are referred to as "collected files".
- "Summary" is a process to e.g. average, integrate and obtain the maximum value using logging data.
- "Summary data" refers to the data obtained through the "summary" process.
- "Summary unit" refers to the unit of time used to display "summary data".
- A "summary file" is a file containing "summary data" output in CSV format for the use on spreadsheet software.
- "Summary data" DB is the database storing "summary data".

3.2 Multi Data Viewer Specifications

The following shows the Multi Data Viewer specifications.

Item		Description
Import data	File type	Collected files in CSV format containing logged device measurement values. Either of the following is applicable: ・EQUO type: The file type used for EQUO device or Setting Manager output data ・EQUO_VIEWER type: The file type used for Station Utility logging data and other data
Data processing		Create summary data DB (database) using the imported logging data by applying the following processes: Summary methods: Averaging, integration, selection of the maximum and minimum values
Graph display	Graph type	Bar graph (*) or line graph * Energy data bar graphs: summation graph, stacked graph, or grouped graph can be specified
	Number of vertical axes (data axes)	Max. 2
	Number of channels to display	Max. 25 for each vertical axis
	Vertical axis unit (Data type specification)	Varies depending on the type of the displayed data Up to two types can be displayed
	Horizontal axis (time axis) unit	Any of second, minute, hour, day, month, and year
	Display period (horizontal axis span)	Any of minute, hour, day, month, and year
	Summary unit (time unit to display summary)	The following shows the summary unit for each display period: ・Minute: No summary (*) ・Hour: 1 minute ・Day: 1 minute/30 minutes/1 hour ・Month: 30 minutes/1 hour/1 day ・Year: 1 day/1 month * The momentary values are displayed when summary is not available
	Graph time/date	Can be specified
	Summary data comparison	Two summary data items can be compared/displayed
Numeric display		Summarized total sum, rate, CO_2 emission, average, maximum, and minimum values are displayed
Other		・Fixed vertical scale display ・Enlarged/reduced horizontal scale (time scale) display ・Favorite data registration ・Graph screen capture
Saved file		XDB file (file with .xdb extension containing "summary data" DB)
Export file		Summary data file (CSV format file) for viewing on spreadsheet software

3.3 Multi Data Viewer Basic Operation Flow

The following shows the basic flow of Multi Data Viewer operation.

Procedure	Reference
Prepare logging data	3.5 Preparing Logging Data
↓	
Start Multi Data Viewer	3.6 Starting/Exiting Multi Data Viewer
↓	
Create "summary data" DB or open an existing "summary data" DB	3.8.1 Creating "Summary Data" DB 3.8.4 Opening "Summary Data" DB
↓	
Import¥summarize logging data from collected files	3.8.3 Adding Imported/Summarized Logging Data to "Summary Data" DB (CSV Import)
↓	
Select the displayed data type (vertical axis unit)	3.9.2 (1) Specifying Displayed Data Type (Vertical Axis Unit)
↓	
Specify the channels to display	3.9.2 (2) Specifying Channels to Display
↓	
Specify the display period	3.9.2 (3) Changing Display Period
↓	
Specify the summary unit	3.9.2 (4) Specifying Summary Unit (Time Unit to Display Summary in Graph)
↓	
Specify the display date and time	3.9.2 (3) Changing Display Period
↓	
Compare the data with previous data (as required)	3.10 Comparing with Data at Different Date/Time
↓	
Save the data to "summary data" DB	3.8.2 Saving "Summary data" DB
Specify the following as required: Auto connection setting, summary display item setting, and CSV export character code setting	3.11.4 Setting Multi Data Viewer

3.4 Multi Data Viewer Operation Quick Reference Guide

The following shows the operation procedure for individual Multi Data Viewer functions.

Function (What to do)		Description	Operation (How to do)
Opening "summary data" DB	Create "summary data" DB	Create an empty "summary data" DB in the local PC and open it.	[File] - [Create New File]
	Open a saved "summary data" DB	Open a saved "summary data" DB in a local PC.	[File] - [Open DB]
	Automatically open the same data next time	The last displayed data opens automatically next time Multi Data Viewer starts.	Auto connect setting in [Setting] - [Viewer setting]
Logging data input	Import and summarize logging data	Summarize the logging data in a CSV file in a specified folder and add the summary data to the "summary data" DB currently opened.	[File] - [CSV import]
Graph area operation	Select data type	Select the data types individually for vertical axes 1 and 2 to display in the graph area. * Use the Setting Tool to specify the data type for each channel data.	Specify in [Ver. Axis 1] and [Ver. Axis 2]
	Specify graph type (Only for energy data)	Select the type from the following bar graph display options for energy data. (Summation/Stacked/Grouped)	Specify in [Graph type]
	Change the display period	Specify the period (horizontal axis (time axis)) to display in the graph area.	Specify in [Display period]
	Change the summary unit	Specify the time unit to summarize the data for graph display in the graph area.	Specify in [Summary unit]
	Specify the date and time	Specify the graph date and time to display in the graph area.	Specify in the date/time setting area
	Fix the vertical scales	Fix the vertical scales for the graph displayed in the graph area.	Select the [Fix scale] checkbox
	Display summary information in numerals	Display the summary information for the graph such as the total sum and average values in numerals in the graph area.	Summary display item setting in [Setting] - [Viewer setting]
Comparative display of summary data on different days	Compare with data on another day	Compare/display the currently displayed data (comparison source) with specified data (comparison target).	[Tool] - [Compare with DB]
	Specify the comparison target date/time	Specify the date/time of the comparison target data.	Specify in the comparison target date/time setting area
General graph operation	Switch display/hide mode	Each screen area can be switched between display and hide.	[View] menu
	Operate the graph	The displayed graph can be enlarged, reduced or moved.	
Other	Add the data to favorite selection	Favorite data (waveforms) can be registered, managed and displayed.	[Favorite] menu
	Capture the graph screen image	Capture the displayed graph screen image and copy it to the clipboard.	[Tool] - [Graph Capture]
Summary data	Save the data to	Save the displayed "summary data" DB	[File] - [Save to

Function (What to do)		Description	Operation (How to do)
output	"summary data" DB	in a local PC as a new DB or overwrite the existing one with the same.	DB]
	Export summary data in CSV format	Output the displayed "summary data" DB in CSV format for viewing on spreadsheet software. The data can be output with the current display settings, or specified period, summary unit and channel settings. * The Main Window and Comparison Window provide CSV Export.	Specify the character code for CSV export in [Setting] - [Viewer setting] [Tool] - [CSV export]

3.5 Preparing Logging Data

Multi Data Viewer can read and summarize either of the following "logging data".

(1) Logging data collected by the Setting Manager logger function directly from devices through communications at specified logging intervals

(2) Logging data collected by EQUO devices at specified logging intervals

3.5.1 Logging Data Collected by Setting Manager Logger Function

(1) Specify the logging conditions with Setting Manager.

(2) Start the logger function and collect the measured data at the specified interval from the devices connected via Ethernet.

(3) Save the collected logging data in a CSV file in the PC's memory.

3.5.2 Logging Data Collected by EQUO Devices

(1) Prepare an SD memory card storing the logging data collected by EQUO devices in a CSV file.

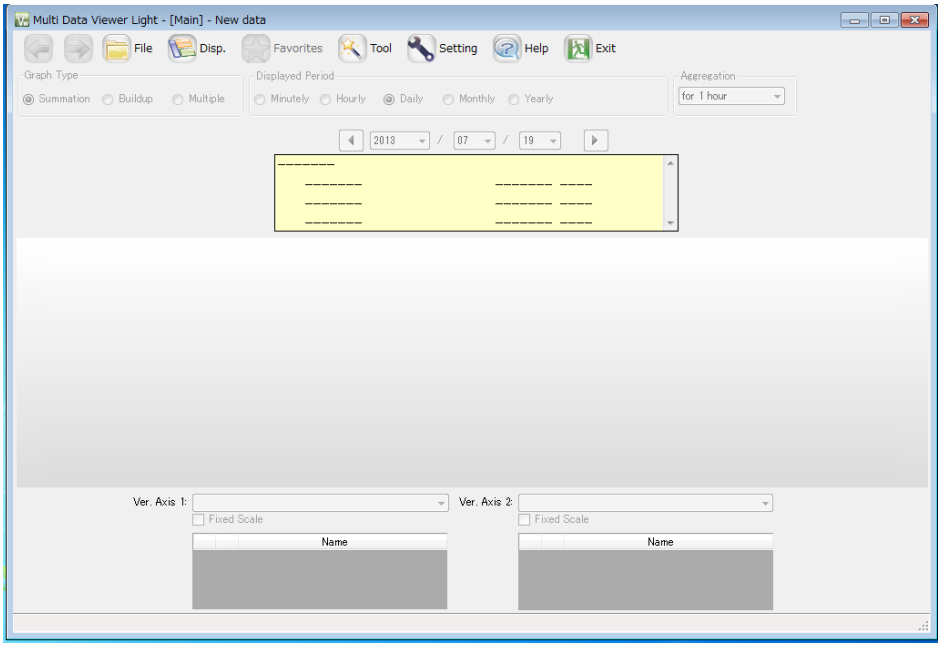
(2) Insert the SD memory card in the memory card slot of the PC or connected SD card reader/writer.

3.6 Starting/Exiting Multi Data Viewer

3.6.1 Starting Multi Data Viewer

(1) Click the Multi Data Viewer shortcut on the Windows desktop or select "All programs" - "OMRON" - "Multi Data Viewer Ver.1.00" from the Windows start button.

(2) The Main Window appears.

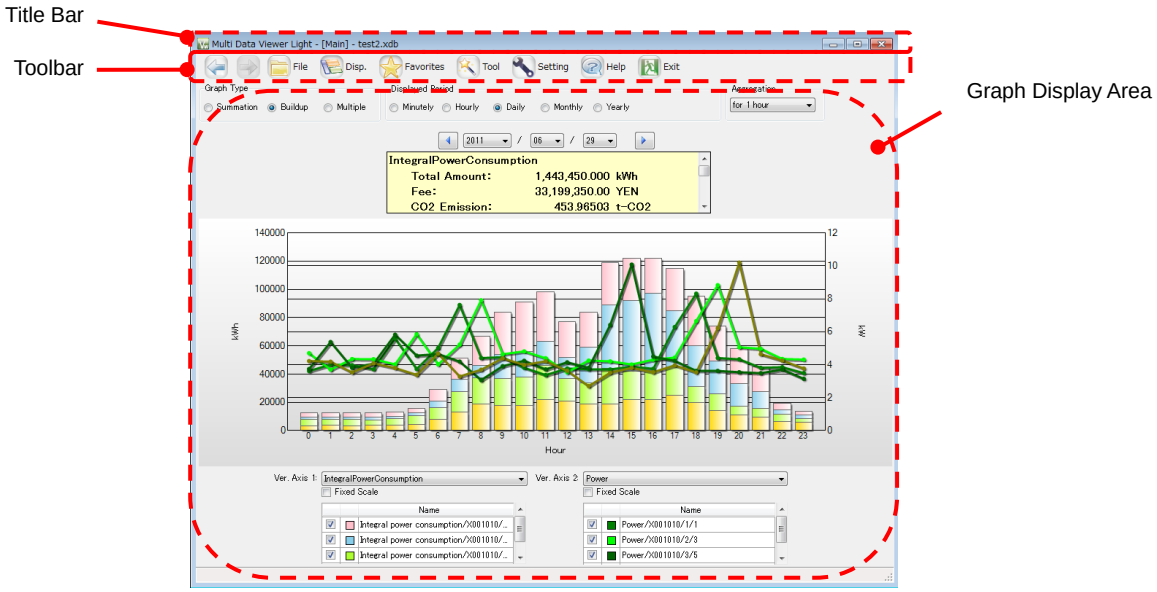


3.6.2 Exiting Multi Data Viewer

Click "Exit" ( ) in the Main Window toolbar to exit Multi Data Viewer.
A confirmation message appears if Multi Data Viewer is accessing the "summary data" DB in the PC, and the data being summarized has not been saved yet.
If an SD memory card (used to write data to the PC) is still in the SD card slot, remove it following the instruction shown on the PC screen.

3.7 Multi Data Viewer Main Window Configuration

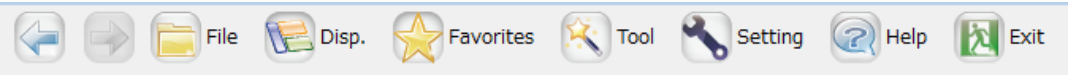
The following shows the Multi Data Viewer Main Window configuration.
The image below include the entire configuration. However, some menu items or controls (e.g. summary functions) may not be displayed depending on the setting.



Section name	Description
Title bar	Multi Data Viewer - [Main Window] - <Connection target> <Connection target>: Displays the open XDB file name. "New data" is shown if the data is newly summarized and the file name is not defined yet.
Toolbar	Shows the icons to access individual functions. Click the corresponding icon to execute each function.
Graph display area	Shows the bar/line graphs of specified channels data included in the displayed "summary data" DB. The graph display can be changed by setting the parameters such as graph horizontal axis (time axis) span (display period), resolution (summary unit), vertical axis data type/unit, date/time of the data, and bar graph type. The numeric display of the total sum, average, and maximum value in the graph is also available.

3.7.1 Main Window Toolbar Functions

The Main Window toolbar provides icons for various functions.



Clicking the toolbar icons executes the following functions:

Icon	Function	
←	"Back": Returns to the previously displayed graph.	
→	"Forward": Shows the originally displayed graph again.	
File	The "File" menu includes the following menu items.	
	Create New File	Creates an empty "summary data" DB in the PC and opens it.
	Open DB	Opens a "summary data" DB saved in the PC.
	Save to DB	Overwrites the original "summary data" DB saved in the PC.
	Save as…	
	CSV import	Locates the relevant logging data among the CSV collected files saved in a specified folder, summarizes the data and add it to the currently open "summary data" DB.
Disp.	The "Disp." menu includes the following menu items.	
	Disp. Summary area	Switches to display or hide the summary area.
	Disp. Setting	Switches to display or hide "Fix scale box" and "Display target selection area".
Favorites	The "Favorite" menu includes the following menu items.	
	Add to Favorites	The data is attached with a marking and can be viewed later at a single click.
	Organize Favorites	Displays the "Favorites" control menu.
	Favorites list	The data items added to "Favorites" are included in the menu item list.
Tool	The "Tool" menu includes the following menu items.	
	Logging	Starts Setting Manager.
	Compare with Previous DB	Integrates data obtained under different conditions with the currently open "summary data" DB into comparative graph representation.
	Graph Capture	Copies the displayed graph image to the clipboard.
	CSV Export	Use this to output the data (extracted from the currently open "summary data" DB) for specified period, channels, and summary unit, in a CSV file with the "summary data" structure.
Setting	Displays the "Viewer setting" window for various Multi Data Viewer settings. The window provides the following settings: ・ Setting for the auto opening of the last displayed data when Multi Data Viewer starts next time ・ Setting for Graph display ・Summary area display item selection ・CSV export character code setting ・Data type setting ・Channel Settings	
Help	Multi Data Viewer Help	Displays the Multi Data Viewer Help files.
	Version Information	Displays the version information.
Exit	Exits Multi Data Viewer.	

3.8 Creating/Saving "Summary Data" DB in PC

The user can use Multi Data Viewer to create a "summary data" DB in the PC and summarize data for reference and analysis.
The created "summary data" DB can be saved as a file (XDB file), which can be opened on Multi Data Viewer for reference and analysis.

3.8.1 Creating "Summary Data" DB

Create a "summary data" DB.
Click "Create New File" in the "File" menu in the toolbar.
Multi Data Viewer creates and opens a new "summary data" DB.
On the created "summary data" DB, "summary data" in CSV files can be imported, which can be then summarized and displayed in graph for analysis.

If graphs are displayed in the Main Window when a new DB is created, Multi Data Viewer closes the displayed "summary data" and opens the new "summary data" DB.

The "Create New File" menu item only creates a DB on Multi Data Viewer and its file is not saved in the PC. To retain the DB for future use, save it before closing.

3.8.2 Saving "Summary data" DB

A "summary data" DB created or opened on Multi Data Viewer using the "Create New File" or "Open DB" menu item can be saved in a file (XDB file).
Saved "summary data" DB files can be opened on Multi Data Viewer.

The following shows the steps to save a "summary data" DB.
(1) Click the "Save to DB" button in the "File" menu in the toolbar.
(2) Enter the file name and click the "Save" button.

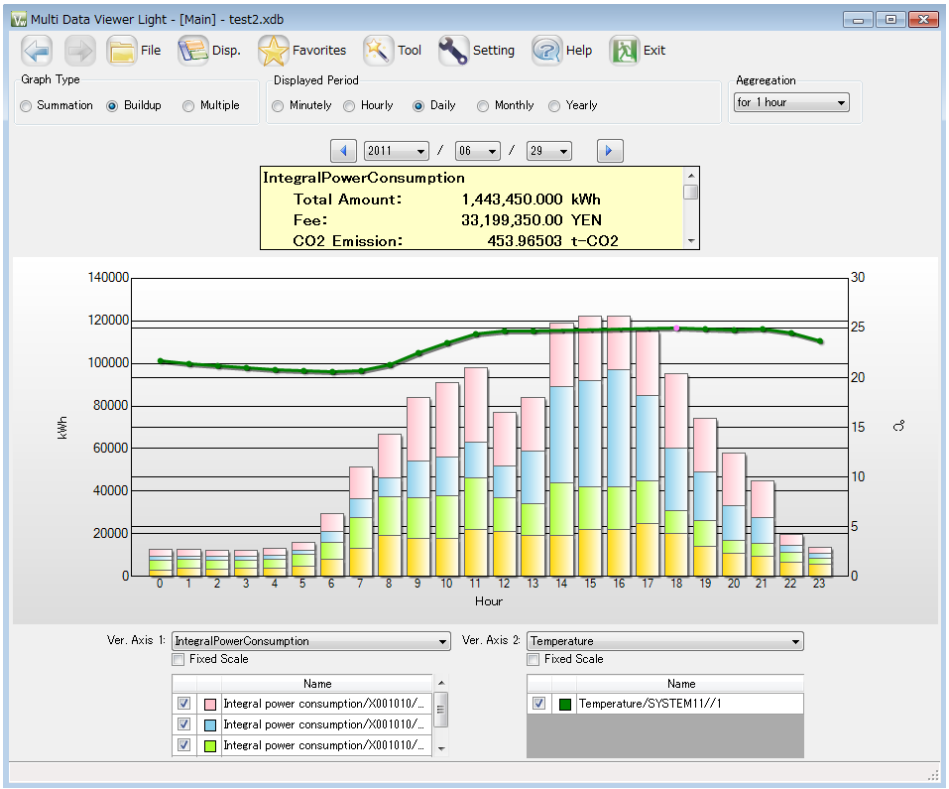
3.8.3 Adding Imported/Summarized Logging Data to "Summary Data" DB (CSV Import)

When using a newly created "summary data" DB, import/summarize "logging data" and feed it into the empty summary data area in the Main Window.
After this, repeat the same procedure of importing and summarizing additional logging data to fill the summary data input area in the Main Window.

Note

- Multi Data Viewer can combine multiple "logging data" items from different EQUO devices into a single "summary data" DB for simultaneous viewing. For example, different types of "logging data" (e.g. temperature and power consumption) can be summarized in a single graph display for analysis.

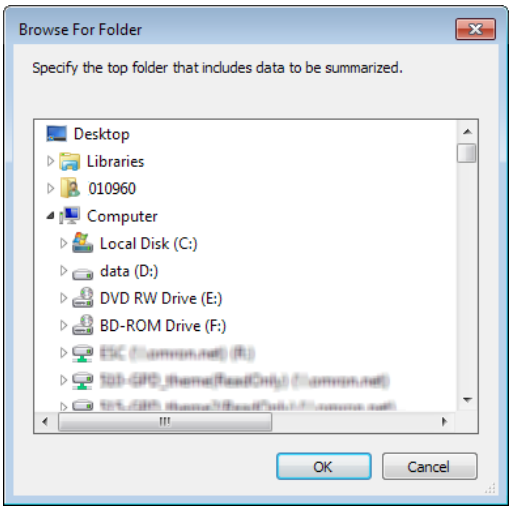
  Example: Integrated power consumption and temperature data combined in a single graph display



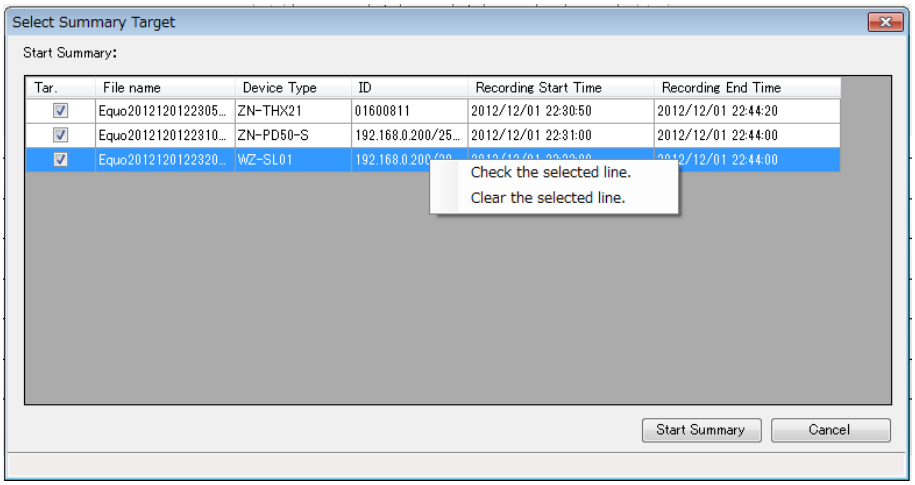
Make sure that the relevant "summary data" DB in the PC is opened. Summarize the "logging data" in "collected data" CSV files and add the summarized data to the open "summary data" DB.

Follow the steps below to add data to the DB:

(1) Click "CSV Import" in the "File" menu in the toolbar.
The "Browse For Folder" window appears.



(2) Specify the folder containing "summary data" and click the "OK" button. Multi Data Viewer automatically searches through the specified folder or drive to locate "summary data" options for selection. The results are shown in the following "Select Summary Target" window.



Note: The search may take a while depending on the data quantity stored in a specified drive or folder. To cancel the search, click the "Cancel" button shown during the process at the left bottom of the window.

(3) Select the corresponding checkboxes (☑) in the "Tar." column in " Start Summary: " and click the "Start Summary" button.

Note

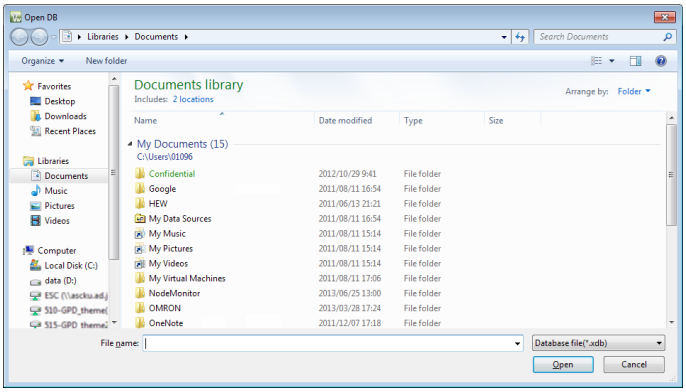
・To select/deselect multiple summary data checkboxes simultaneously in the "Select Summary Target" window, hold Ctrl or Shift key while left-clicking the data items to select. When the items are selected, right-click to display the context menu and select the "Check the selected line." or "Clear the selected line.

3.8.4 Opening "Summary Data" DB

The user can open a saved "summary data" DB to review and analyze the summary results.
Note: To open another "summary data" DB, close the currently open "summary data" DB before opening the other.

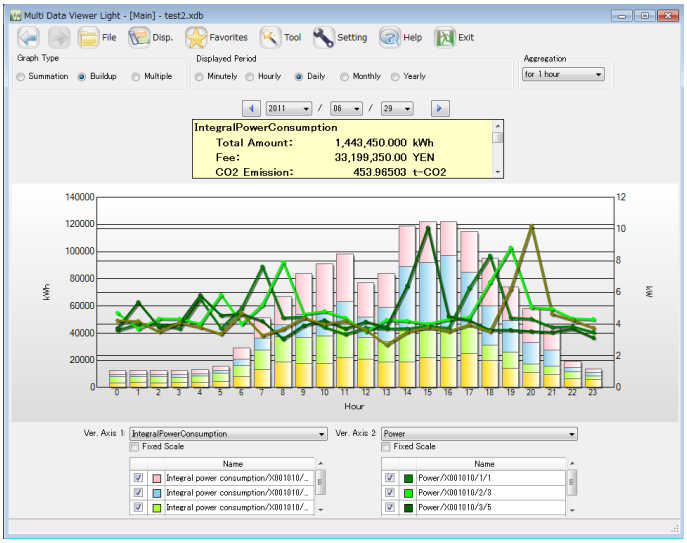
Follow the steps below to open a saved "summary data" DB.

(1) Click "Open DB" in the "File" menu in the toolbar.



(2) Specify the DB file and click the "Open" button.

(3) The selected "summary data" DB is read into the Main Window.



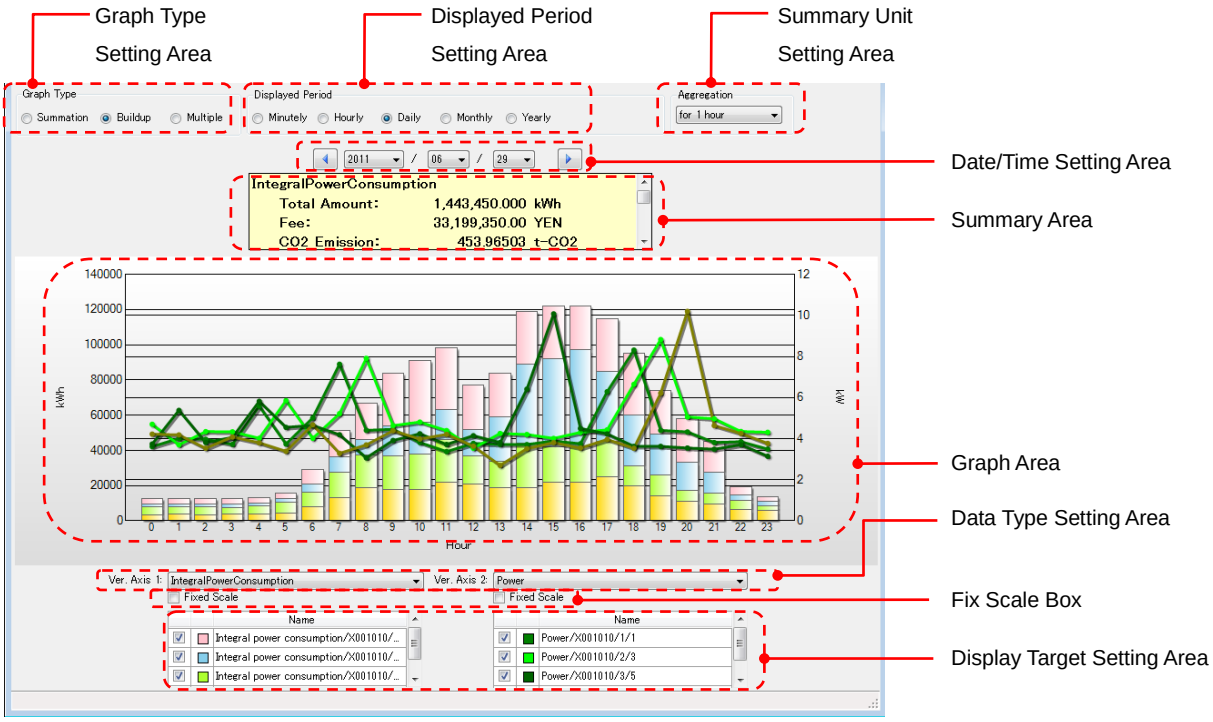
3.9 Displaying Graph on Multi Data Viewer

Multi Data Viewer provides the graph display of summary results (data of specified channels) supporting operational efficiency analysis.

Various functions are available with the Multi Data Viewer Main Window for efficient review and analysis of summary result graphs.

3.9.1 Multi Data Viewer Graph Display Area Functions

The Multi Data Viewer graph display area shows summary data in "summary data" DB in graph display. The area comprises the following sections:



Section name	Description
Graph type setting area	Specify the graph type to plot in the graph area.
Display period setting area	Specify the graph period to plot in the graph area.
Summary unit setting area	Specify the summary unit for the graph to plot in the graph area.
Date/time setting area	Specify the date/time for the graph to plot in the graph area.
Summary area	Shows a summary note of the displayed data.
Graph area	Displays summary graphs according to the settings shown below the graph area. The horizontal axis (time axis) and the scale can be enlarged or reduced by mouse operation.
Data type setting area	The data types to plot in the graph area can be individually specified for vertical axes 1 and 2. The same type cannot be specified for axes 1 and 1.
Fix scale box	Specify if the scale intervals for vertical axes 1 and 2 automatically change according to the displayed data or remain unchanged (fixed).
Display target setting area	Displays a list of the channels in specific "summary data". Use this to specify the target channels to plot in the graph area.

3.9.2 Setting Graph Display

Various functions are available with the Multi Data Viewer graph display area for efficient review and analysis of summary result graphs.
This section describes the support functions available with graph operation.

(1) Specifying Displayed Data Type (Vertical Axis Unit)

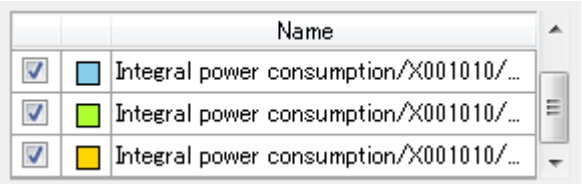
Up to two data types can be displayed in a single graph display.
Specify the graph data type for "Ver. axis 1" and "Ver. Axis 2" in the data type setting area. Graphs in the specified data types are displayed in the graph display area.

These settings automatically determine the value units for the individual axes (*).
* The "units" specified with Setting Manager ("Data type setting") beforehand are selected.
The data type unit specified for "Ver. Axis 1" is shown at the left of the graph area, and the "Ver. Axis 2" data type unit, at the right of the graph area.
The same data type cannot be specified for "Ver. Axis 1" and "Ver. Axis 2".

(2) Specifying Channels to Display

Specify the channels to display in a graph in the display target setting area.
The channels of the data types specified in step (1) for "Ver. Axis 1" and "Ver. Axis 2" are displayed in individual lists.

Select the "Display" checkboxes (☑) for the channels to display.



The "display target setting area" provides the following information.

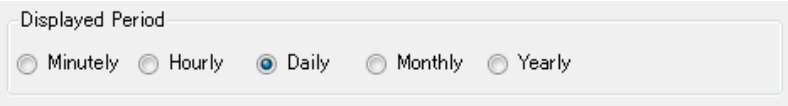
Item	Description
Checkbox	A channel with the checkbox selected (☑) is a summary target.
Color sample	The graph for the channel is displayed in this color.
Name	The name to identify each channel. By default, the string consisting of data type/serial No./Unit No./data ID is entered.

The checkboxes can be hidden or displayed by switching the "Disp. Settings" selection in the “Disp.” menu in the toolbar.
Changing the checkbox settings in the Display column updates the summary and shows the updated graph.

(3) Changing Display Period

Change the display period setting on the graph's horizontal axis (time axis) in the "Display period setting area".

Five options: Minutely, Hourly, Daily, Monthly and Yearly are available. Upon selecting the option, the data summary is performed again.

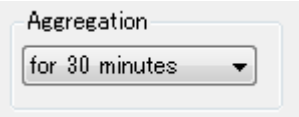


The horizontal axis range and summary unit vary depending on the display period as follows:

Display period	Axis range	Summary unit
Minutely	1 minute	No summary
Hourly	1 hour	1 minute
Dayly	1 day	1 minute/30 minutes/60 minutes (Selectable)
Monthly	1 month	30 minutes/60 minutes/1 day (Selectable)
Yearly	1 year	1 day/1 month (Selectable)

(4) Specifying Summary Unit (Time Unit to Display Summary in Graph)

Specify the time unit (summary unit) for graph display in the summary unit setting area.



The following summary unit options are available depending on the display period specified in step (3):

Display period	Summary unit setting	Default setting
Minutely	No summary	No summary
Hourly	1 minute	1 minute
Daily	1 minute/30 minutes/1 hour	1 hour
Monthly	30 minutes/1 hour/1 day	1 day
Yearly	1 day/1 month	1 month

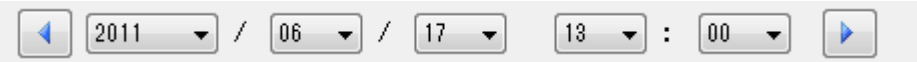
The following shows the summary procedure for each summary unit option:

Summary unit	Summary procedure for graph display
No summary	Plot all the momentary values
1 minute	"00": Plot the sum of the momentary values starting from 00 min. 00 sec. to immediately before 01 min. 00 sec.
30 minutes	"0": Plot the sum of the momentary values starting from 0 hour 00 min. 00 sec. to immediately before 0 hour 30 min. 00 sec. "30": Plot the sum of the momentary values starting from 0 hour 30 min. 00 sec. to immediately before 1 hour 00 min. 00 sec.
1 hour	"0": Plot the sum of the momentary values starting from 0 hour 00 min. 00 sec. to immediately before 1 hour 00 min. 00 sec.
1 day	"1": Plot the sum of the momentary values starting from 0 hour 00 min. 00 sec. of the day to immediately before 0 hour 00 min. 00 sec. of the next day.
1 month	"1": Plot the sum of the momentary values starting from 0 hour 00 min. 00 sec. of the first day of the month to immediately before 0 hour 00 min. 00 sec. of the first day of the next month.
1 year	"2011": Plot the sum of the momentary values starting from 0 hour 00 min. 00 sec. of the Jan. 1st of the year to immediately before 0 hour 00 min. 00 sec. of the Jan. 1st of 2012.

(5) Specifying Display Date and Time

To specify the date and time for the graph display, select "Date/time" in "Graph Setting". The shown button and combo box options vary depending on the selected display period.

・Minute:



Select year, month, day, hour and minute values in the combo boxes. The previous minute and next minute can be selected by using the buttons.

・Hour:

Select year, month, day and hour values in the combo boxes. The previous hour and next hour can be selected by using the buttons.

・Day:

Select year, month and day in the combo boxes. The previous day and next day can be selected by using the buttons.

・Month:

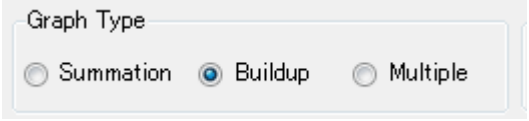
Select year and month in the combo boxes. The previous month and next month can be selected by using the buttons.

・Year:

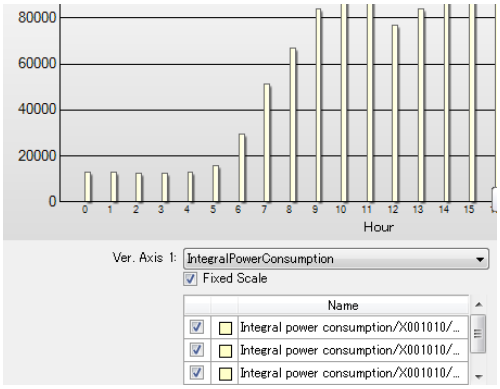
Select year in the combo box. The previous year and next year can be selected by using the buttons.

(6) Switching Bar Graph Type

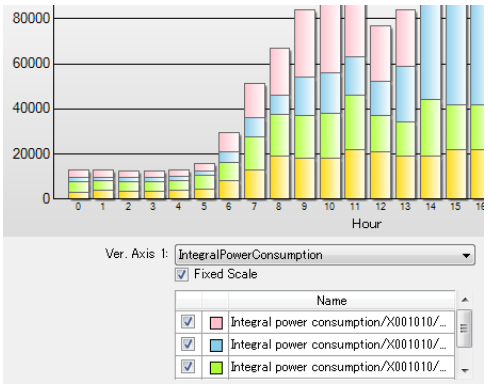
The graph type can be changed for energy data displayed in a bar graph. Select the type from three types: summation, stacked, and grouped bar graphs in the "Graph Type" area.



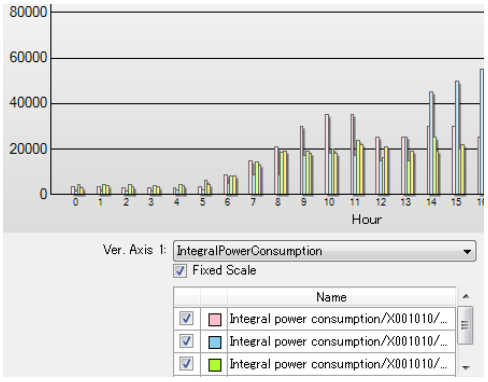
・Summation: Displays the summed values of selected channel values.



・Buildup: Stacks the summed values of selected channel values in different colors.



・Compare: Displays the selected channel values independently side-by-side.

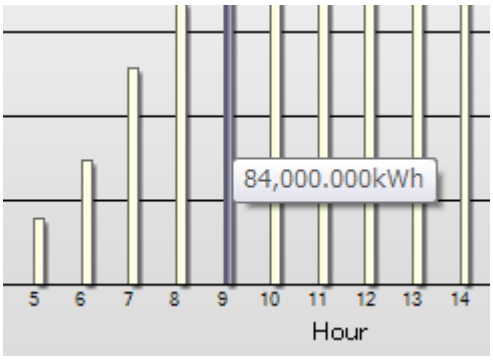


Note

・Temperature, particle, momentary current level and other value graphs, which are displayed in line graphs are not influenced by switching the graph type. The graph type does not change.

(7) Switching to Detailed View

The graph display can be viewed in detail. Move the mouse over a specific measurement point on the displayed bar graph or line graph. The corresponding portion of the graph is highlighted and the value in the time range is shown in a tooltip.



Double-clicking the selected portion (while it is highlighted) displays a detailed graph image of the time range.*[1] (Drill-down function)

The original window (recorded in the window history) can be accessed by clicking the "Back" button from the drilled-down graph window.

The drill-down function is only enabled when the default summary unit is specified for the selected display period. For example, since the default summary unit for the display period of "year" is "month", "month" must be selected to enable the drill-down function.

*1: Not available for the "Hour" setting in "Display period".

(8) Fixing Scales

Specify whether the scale interval for each vertical axis automatically changes according to the displayed data, or fixed to the current representation. Select the "Fix Scale" checkbox to use the fixed scale.

Select the checkbox (☑) to fix the scale to intuitively check the amount of value variations when continuously changing the display date and time, or repeatedly displaying/hiding the channel display.

(9) Hiding Areas from Display

Hiding "Summary Area"

Click the "Disp. Summary Area" in the “Disp.” menu.

Hiding "Display Target Selection Area"

Click the "Disp. Settings" in the “Disp.” menu.

(10) Checking Window History

Multi Data Viewer provides the history of up to 16 windows previously displayed.
If any windows are recorded in the history, the "Previous" and "Next" buttons at the left end of the toolbar are enabled.

Use these buttons to access previously displayed windows.

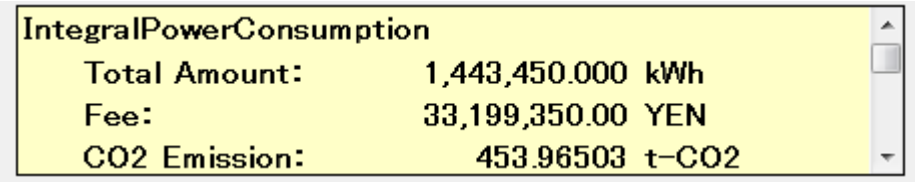
(11) Mouse Operation of Graph Area

The following shows the graph operation in the graph area available by using the mouse:

Function	Operation	Description
Data display in tooltip	Point with the mouse	The color of the pointed graph changes to its complementary color. The pointed graph data value is shown.
Zoom in	Drag the area	The area is encircled in light gray. The area in the graph is magnified in the X-axis direction to include the points from the left drag start to the release, as well as their immediately preceding and following points in the view. Change the graph display setting to cancel the zoomed-in view.
Zoom out	Right-click on the zoomed-in view, or click the left button on the scroll bar shown at the bottom of the graph area	Returns to the original magnification ratio before zoom-in.
Scroll	Scroll the scroll bar at the bottom of the graph area to the left or right	The graph area view shifts in the direction the scroll bar is moved.

3.9.3 Displaying Summary Note

The summary area shows a summary note of the displayed data in numerical values.



The values specified in "Setting" are used as the coefficients to summarize "Rate" and "CO_2 emissions".

Specify if the following summary values are displayed for data other than energy data.

Display item	Description
Summary value	The value obtained by the "Summary method" specified in "Data Type Setting" with the Setting Tool. Example: When the data summary method for the "Temperature" data type is set to "Average", the average value is displayed.

Note

・Specify whether each data is "energy data" or not in "Data Type Setting" with Setting Manager beforehand.

3.10 Comparing with Data at Different Date/Time

Multi Data Viewer provides data comparison display allowing the user to compare the currently displayed summary data with another data (comparison target) of different date/time included in the same DB.

3.10.1 Opening Comparison Window

Follow the steps below to open the Comparison Window.

(1) Click the "Compare With Previous Data" button in the "Tool" menu in the Main Window toolbar.

(2) The "Comparison Window" appears to show the currently displayed "summary data" as the "comparison source" and specific previous data in the same DB as the "comparison target".
The window uses the same display settings (display period, summary unit, data type, and scale fixing) as used by the Main Window at the time the " Compare With Previous Data " button is clicked.

3.10.2 Closing Comparison Window

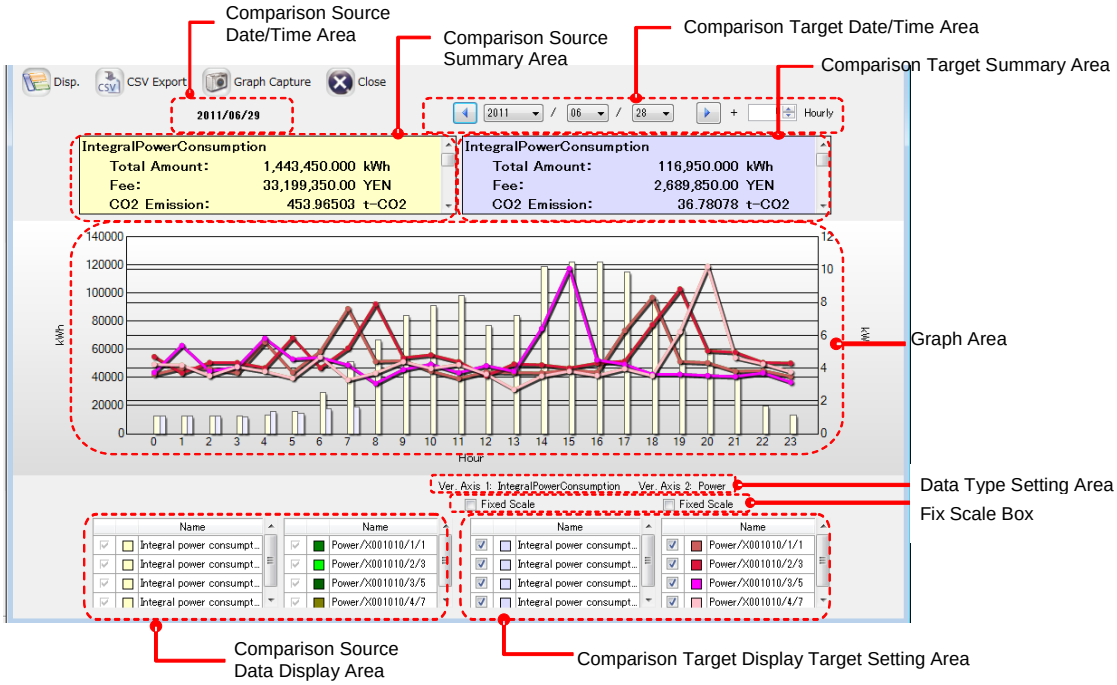
Follow the steps below to close the Comparison Window.

(1) Click the "Close" button in the toolbar in the Comparison Window. The window closes and the Main Window returns.

3.10.3 Comparison Window Configuration

Use this window to compare the displayed data (comparison source) with another data (comparison target) of different date and time.

The window comprises the comparison source summary/data display area at the left and comparison target summary/display target setting area at the right, as shown below:



Section name	Description
Comparison source date/time display area	Shows the comparison source date/time to plot in the graph area.
Comparison source summary area	Shows the comparison source summary to plot in the graph area.
Comparison target date/time area	Shows the comparison target date/time to plot in the graph area.
Comparison target summary area	Shows the comparison target summary to plot in the graph area.
Graph area	Displays comparison source and target summary graphs according to the settings shown below the graph area. ・The window does not display any comparison target graph if the target does not include the data type selected by using the Main Window data type selection function. ・The bar graphs in the Comparison Window are available only in the summation type.
Data type setting area	The data types to plot in the graph area can be individually specified for vertical axes 1 and 2. The same type cannot be specified for axes 1 and 1.
Fix scale box	Specify if the scale intervals for vertical axes 1 and 2 automatically change according to the displayed data or remain unchanged (fixed).
Comparison source data display area	Shows the setting to specify the comparison source data to plot in the graph area.
Comparison target display target setting area	Specify the comparison target data to plot in the graph area.

- The comparison source data date/time setting and display target setting are automatically fixed to the values specified for the Main Window at the time the "Compare with DB" button is clicked.
- The comparison target data date/time is automatically set to the value immediately preceding to the date/time of the data displayed in the Main Window. (If the display period is "Day" and the Main Window data is dated Dec. 20, the comparison target data date is Dec. 19; if the display period is "Hour" and Main Window shows the 13:00 data, the target data time is 12:00.)

(1) Displaying Comparison Source

The comparison source data display area shows the same information as the comparison source summary data displayed in the Main Window at the time the Comparison Window is started.

The Comparison Window does not provide display condition settings. To change the settings, return to the Main Window, and start the Comparison Window again after completing necessary settings.

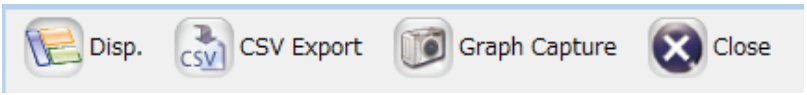
(2) Selecting Comparison Target

Specify the display conditions used to plot summary data with different conditions as the comparison target. The operation is similar as the display condition setting procedure in the Main Window.

The Comparison Window does not provide the graph type and display period settings. To change the settings, return to the Main Window, and start the Comparison Window again after completing necessary settings.

3.10.4 Comparison Window Toolbar Functions

Some functions assigned to the Comparison Window toolbar are different from the Main Window toolbar.



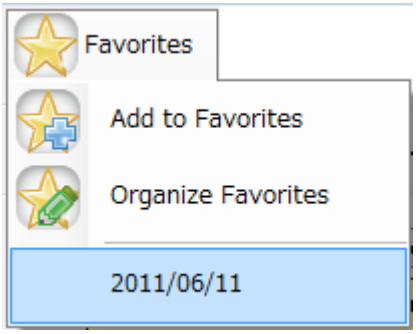
Clicking the toolbar icons executes the following functions:

Disp.	The “Disp.” menu includes the following menu items.	
	Disp. Summary Area	Switches to display or hide the summary area.
	Disp. Settings	Switches to display or hide "Fix scale box" and "Display target selection area".
CSV Export	Use this to output the data (extracted from the currently open "summary data" DB) for specified period, channels, and summary unit, in a CSV file with the "summary data" structure.	
Graph Capture	Copies the displayed graph image to the clipboard.	
Close	Closes the Comparison Window and return to the Main Window.	

3.11 Other Operating Features of Multi Data Viewer

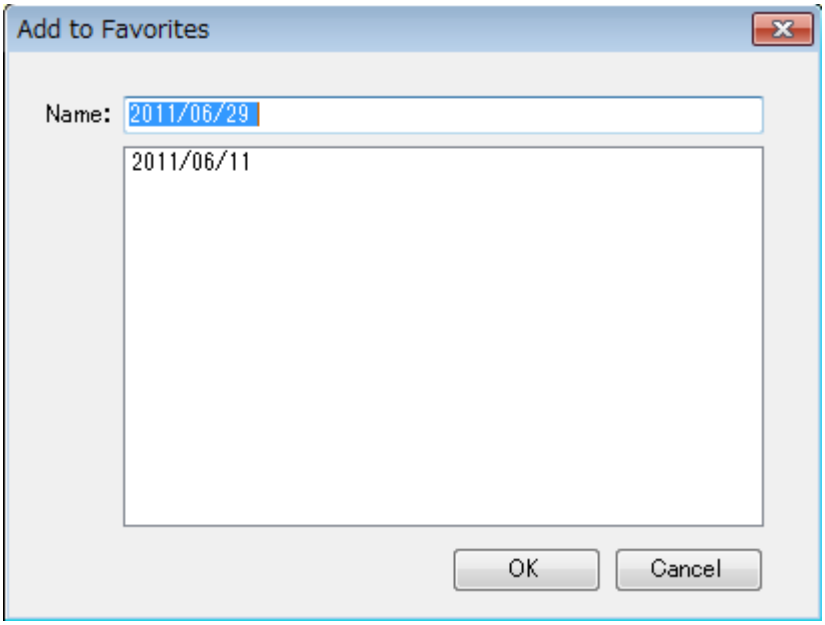
3.11.1 Saving Data in "Favorites"

Clicking "Add to Favorites" attaches a mark to a channel or channel folder enabling the user to access the data later at one click.
The channels added to "Favorites" are listed below the last "Favorites" menu item on the menu bar.
The "Favorites" data is saved in the PC and cannot be shared.



(1) Adding to Favorites

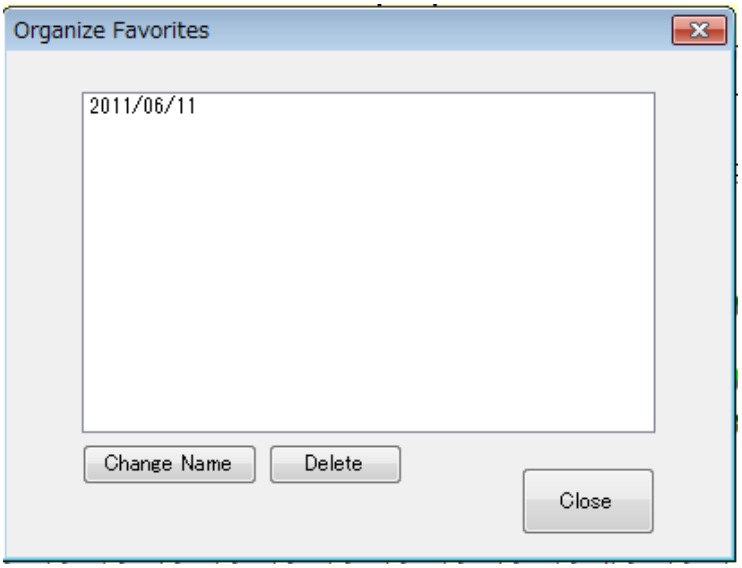
Click "Add to Favorites" in the "Favorites" menu. Multi Data Viewer saves the channel being accessed and the display settings in the PC.



Enter the name for the new "Favorites" data in the "Name" area.
The data names already registered are shown in the list area below the "Name" box.
Click the "OK" button to add the data to registration. The added data name is shown below the last item in the list.

(2) Organizing Favorites

Click "Organize Favorites" in the "Favorites" menu. The “Organize Favorites” window appears.



Using this window, the user can edit the names of data items or delete data items registered in "Favorites".
To change the data name, select the data in the list and click the "Change Name" button, then enter a new name.
Select the data items to delete and click the "Delete" button. The selected data is removed from "Favorites".

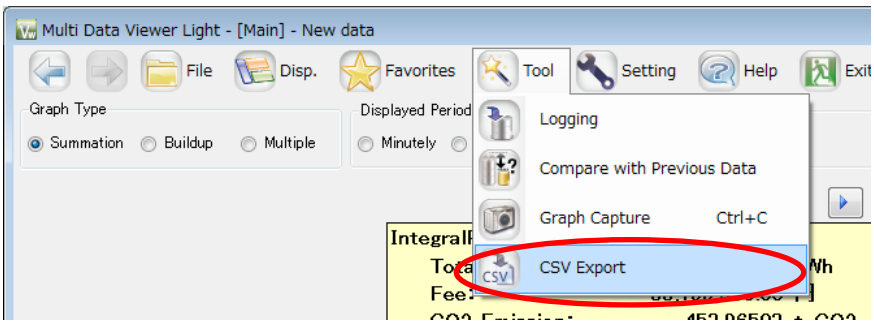
3.11.2 Outputting Summary Data in CSV Format

The summary data currently viewed can be output in a CSV file with the same conditions and display settings (as those used in the current viewing). This facilitates analysis of the data using other spreadsheet software.
For "CSV Export", the user can specify not only the CSV file destination folder and file name, but also other items including the output type, output period, summary unit, and output channels.

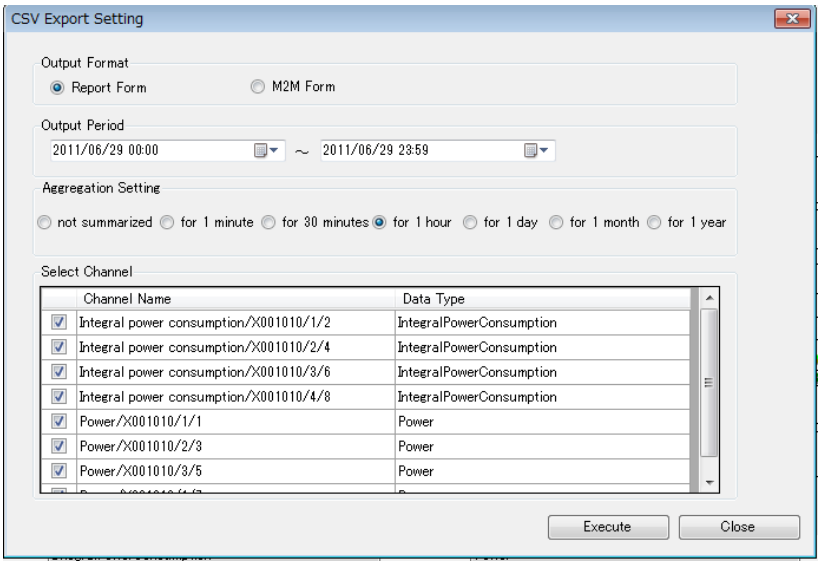
Note

・Please note that the CSV files output in "CSV Export" in the "Tool" menu and those imported in "CSV import" in the "File" menu are not compatible. The first files contain summary data ("summary files") and the latter, logging data ("collected files").

(1) Click the "CSV Export" button in the "Tool" menu in the toolbar.



(2) The "CSV Export Setting" window appears.



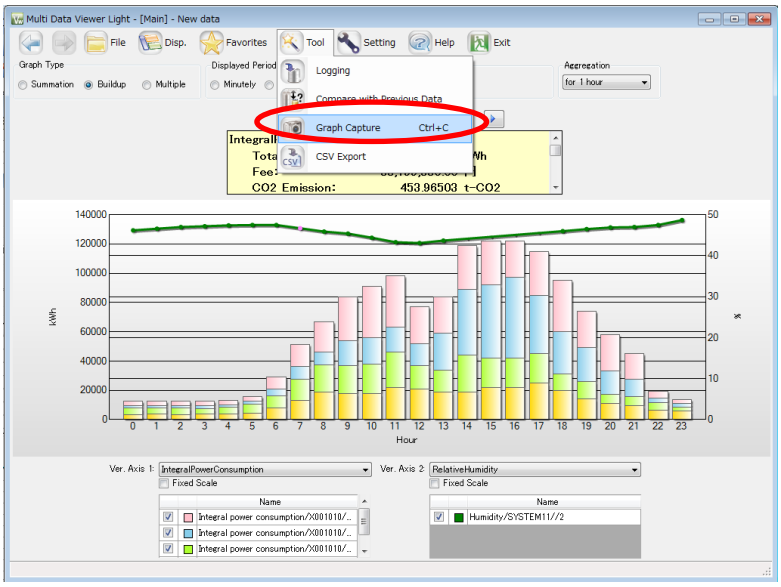
Item	Description
Output Format	Select the data format used to output a CSV file. Refer to the format description in a later section for the output data format.
Output Period	Specify the data period for CSV Export. Click the calendar icons in the date boxes to specify the period.
Aggregation setting	Specify the data summary unit for CSV Export.
Select Channel	Select the channels for CSV Export using the checkboxes. All the checkboxes are selected (☑) by default.

(3) Select the data to output and the save destination, then click the "OK" button.
The summary data is output in a CSV file.

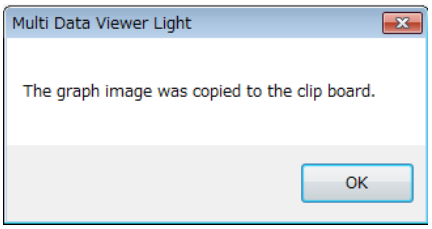
3.11.3 Outputting Graph Image to Clipboard

The user can copy the currently displayed graph image to the clipboard.

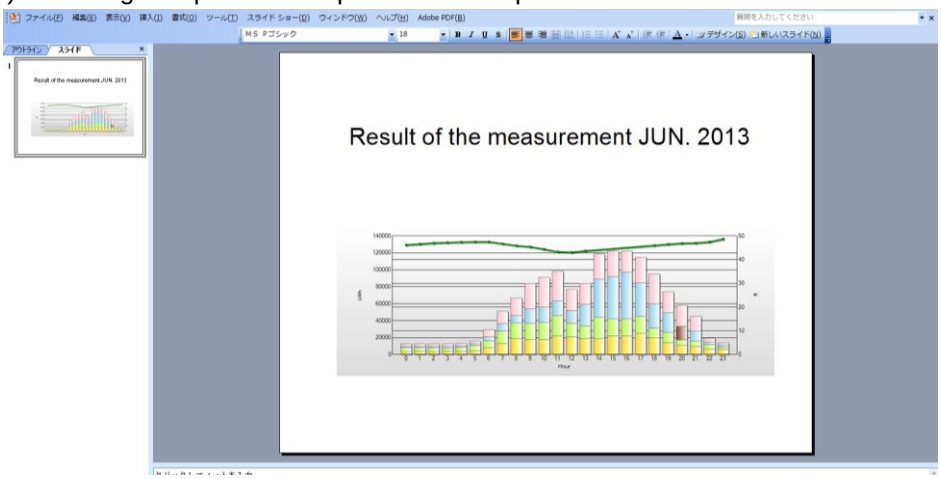
(1) Display the graph image to capture. Click "Graph Capture" in the "Tool" menu in the toolbar.



(2) Multi Data Viewer outputs the graph image to the clipboard and displays the confirmation window.

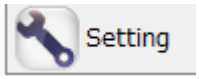


(3) The image output to the clipboard can be pasted in other software.

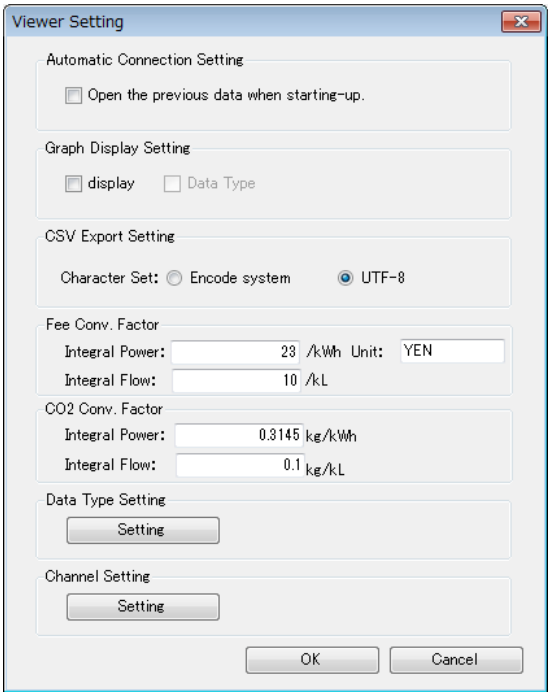


3.11.4 Setting Multi Data Viewer

(1) Viewer Setting

(1) Click the "Setting" 

button in the toolbar in the Main Window.



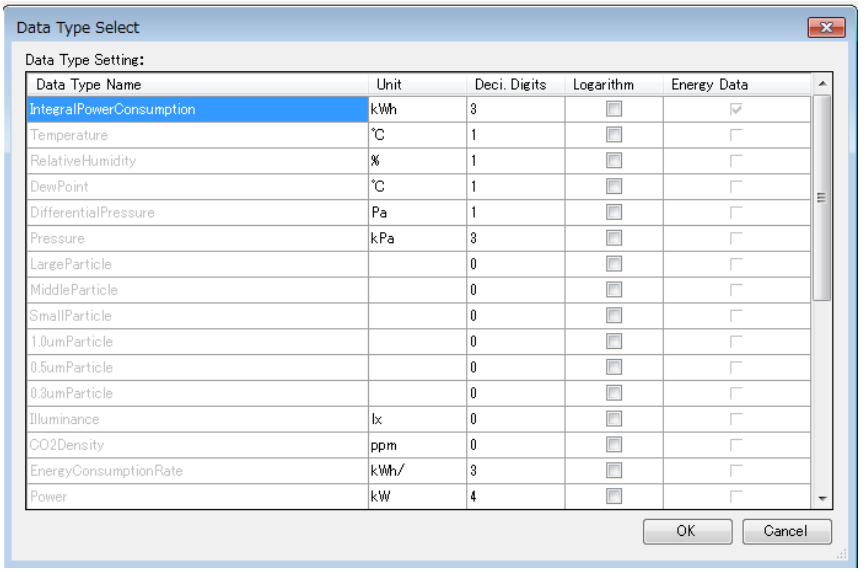
The "Viewer Setting" window appears.

Setting item	Description
Automatic connection Setting	Specify if Multi Data Viewer automatically opens the last displayed data next time it is started.
Graph display Setting Legend/data type	Specify if a legend for the graph is displayed. Also specify if the legend includes the "Data type" specified in the channel setting, when the legend is displayed.
CSV Export/Character Set setting	Specify the CSV file character encoding for CSV Export.
Fee Conversion Factor Setting	Specify the rate conversion coefficient. The sum of integrated powers is multiplied by this coefficient to obtain the rate value displayed in the summary area.
CO_2 Conversion Factor Setting	Specify the CO_2 conversion coefficient. The sum of integrated powers is multiplied by this coefficient to obtain the CO_2 value displayed in the summary area.

Click the "OK" button after changing Viewer settings. The Main Window returns. Click the "Cancel" button to abort the settings.

(2) Data Type Setting

Click the "Setting" button in the data type setting area at the bottom of the "Viewer setting" window. The "Data type setting window" appears enabling the user to specify data types.



Item	Description
Data Type Name	Displays the data type description. System-defined names cannot be edited or deleted.
Unit	The unit for the data type. The unit specified here is displayed at the side of the vertical axis of the graph.
Decimal Digits	The significant digit for the data type. Values are rounded at this digit for graph and summary area displays.
Logarithm	Specifies if the vertical axis is represented in logarithm when displaying data of the data type. Select the checkbox (☑) for logarithmic representation.
Energy Data	Specifies if the rate and CO_2 emission level are displayed in the summary area. If this is selected, the rate and CO_2 emissions values are displayed. System-provided data cannot be edited or deleted.

To add a new data type, enter it below the last line of the list.

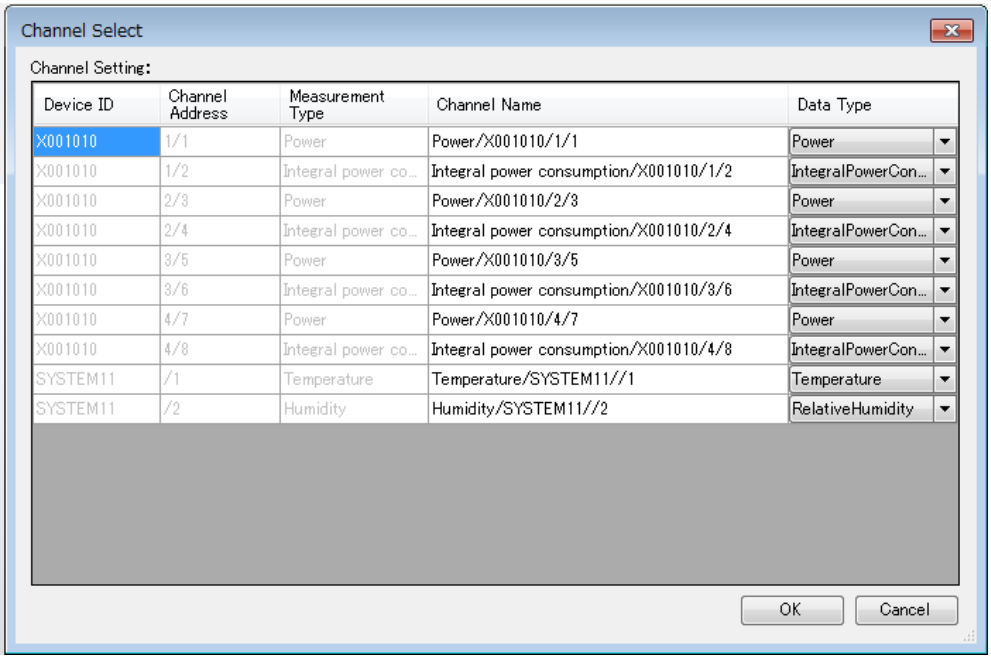
For data type editing, select the registered item and edit its data type.

Clicking the "OK" button returns the "Viewer setting" window.

Clicking the "Cancel" button aborts the settings and closes the window.

(3) Channel Setting

Click the "Setting" button in the channel setting area at the bottom of the "Viewer setting" window. The "Channel setting window" appears enabling the user to specify channels.


Channel Select
Channel Setting:
Device ID
Channel Address
Measurement Type
Channel Name
Data Type
X001010 1/1 Power Power/X001010/1/1 Power
X001010 1/2 Integral power co... Integral power consumption/X001010/1/2 IntegralPowerCon...
X001010 2/3 Power Power/X001010/2/3 Power
X001010 2/4 Integral power co... Integral power consumption/X001010/2/4 IntegralPowerCon...
X001010 3/5 Power Power/X001010/3/5 Power
X001010 3/6 Integral power co... Integral power consumption/X001010/3/6 IntegralPowerCon...
X001010 4/7 Power Power/X001010/4/7 Power
X001010 4/8 Integral power co... Integral power consumption/X001010/4/8 IntegralPowerCon...
SYSTEM11 /1 Temperature Temperature/SYSTEM11//1 Temperature
SYSTEM11 /2 Humidity Humidity/SYSTEM11//2 RelativeHumidity
OK
Cancel

Item	Description
Device ID	Displays the measurement device name.
Channel Address	Displays the address to identify the channel.
Measurement Type	Displays the data type of the measured data.
Channel Name	Displays the channel name. Edit this item to change the displayed channel name.
Data Type	Select the type of the channel data in the list.

For channel editing, select the registered channel and edit its settings.
Clicking the "OK" button returns the "Viewer Setting" window.
Clicking the "Cancel" button aborts the settings and closes the window.

3.12 Multi Data Viewer CSV Output Data Format

This section describes the data structure of CSV files output by executing "CSV Export" in the "Tool" menu in the Main Window. The following shows the summary data file (summary file) structure.

Item	Description
Extension	.csv (all files)
Character code	Uses the character code specified in "CSV export setting" in the "Viewer setting" window.
Measurement Type	Displays the data type of the measured data.
Default file name	<Start date/time> - <End date/time>".csv"
Data type	Select the type of the channel data in the list.

3.12.1 Report Type File Data Structure

The following shows the "Report type" CSV data structure output by executing "CSV Export" in the "Tool" menu in the Main Window. The file uses a commonly-used CSV format.

(1) Header Section

DATE,TIME,MSEC, <Channel Name> (<Unit 1>)(<Data type name 1>),…

Item	Description
<Channel Name {n}>	The channel name specified by the user with the server.
<Unit {n}>	The unit of the data type (specified for each recording device) of the nth data displayed in the graph (The value specified for the "Unit row" in the data type setting window). * "-" is output if the data has no unit. Note that "All data" output uses a different structure.
<Data type name {n}>	The value specified in the "Data type" row in the channel setting window, output for the nth data.
<SP>	A half-width space used as a character.

{n}: 1 to the number of repetitions multiplied by the number of recording devices.

(2) Data Section

<Year-Month-Day>","<Time>","<Millisecond>","<Value 1>,"…
…..

Item	Description
<Year-Month-Day>	The year, month and day of the displayed graph. Output in the YYYY/MM/DD format.
<Time>	The hour, minute and second of the displayed graph. Output in the hh:mm:ss format. "00" is output for a time value smaller than the non-displayed period. For example, if the display period is "Day" (summary unit: 30 minutes), only "00" or "30" are output for the minute value. The second value is fixed to "00".
<Millisecond>	The millisecond value of the displayed graph. Output in the "000" format. "000" is fixed to the value if the graph does not display momentary values.
<Value {n}>	The value corresponding to the header of the displayed graph. Any of the following values:

	PI…Integrated value, AVE…Average value, MAX…Maximum value, and MIN…Minimum value * "0" is output for PI, if SUMMARY_TYPE is other than INTEGRAL (Same as the graph area display).

{n}: 1 to the number of repetitions multiplied by the number of recording devices.

The following shows concrete examples:

[Example 1] Display period is "Day" (Summary unit: 30 minutes) in the Main Window

```
DATE,TIME,MSEC,Integrated power
consumption1(kWh)(INTEGRAL_POWER_CONSUMPTION),Integrated power
consumption2(kWh)( INTEGRAL_POWER_CONSUMPTION),Temperature (℃) (TEMP)
2011/06/06,00:00:00,000,22.43,12.01,18.4
2011/06/06,00:30:00,000,20.21,11.89,18.4
2011/06/06,01:00:00,000,22.12,10.73,18.3
2011/06/06,01:30:00,000,20.03,10.24,18.2
...
2011/06/06,23:30:00,000,21.48,11.96,18.5
```

[Example 2] Display period is "Hour" in the Main Window

```
DATE,TIME,MSEC, Integrated power
consumption1(kWh)(INTEGRAL_POWER_CONSUMPTION), Integrated power
consumption2(kWh)(INTEGRAL_POWER_CONSUMPTION),Temperature(℃)(TEMP)
2011/06/06,12:00:00,000,22.43,12.01,18.4
2011/06/06,12:01:00,000,20.21,11.89,18.4
2011/06/06,12:02:00,000,22.12,10.73,18.3
2011/06/06,12:03:00,000,20.03,10.24,18.2
...
2011/06/06,12:59:00,000,21.48,11.96,18.5
```

3.12.2 M2M Type File Data Structure

The following shows the CSV file data structure for "M2M type" output by executing "CSV Export" in the "Tool" menu in the Main Window. The M2M type is a standard data format used by OMRON's tools. Each line starts with a string representing the definition of the line.

(1) Header Section

The following shows the file data structure output in the "All data" mode:

Header Section (Line 1)

HEAD,DATE,TIME,"<Data type name1>(<Unit 1>)(<Recording device name 1>[_KM<Unit No. 1>]<SP>< Summary type 1><Measurement target channel ID 1>),"…

The section enclosed by brackets ([ ]) is output only for the data recorded with KMX.

Item	Description
<Data type name {n}>	The data type of the nth data.
<Unit {n}>	The unit for the nth data.
<Channel Name {n}>	The channel name from which the nth data is output.
<Summary type {n}>	Outputs the summary method used to summarize the nth data. PI… Integrated Value, AVE… Average Value, MAX… Maximum Value, MIN… Minimum Value. * Integrated values are only used for integrated power consumption or pulse data outputs.
<Measurement target channel ID{n}>	Outputs the data ID the corresponding sensor outputs for the nth data.
<SP>	A half-width space used as a character.

(2) Data Section

Data Section (Line 2 and thereafter)

DATA,<Year-Month-Day>,<Time>,<Value 1>,<Value 2>,…

Item	Description
<Year-Month-Day>	The year, month and day of the displayed graph. Output in the YYYY/MM/DD format.
<Time>	The hour, minute and second of the displayed graph. Output in the hh:mm:ss format.
<Value {n}>	The value recorded by the relevant sensor at a specified time.

[Example 3]
HEAD,DATE,TIME," Integrated power consumptionN(kWh)(X001010_4/8 PI8)",
"Integrated power consumption(kWh)(X001010_3/6 PI6)",
"Temperature(℃)(SYSTEM11_1 AI1)"
DATA,2011/06/29,00:00:00,3125,4575,21.7
DATA,2011/06/29,01:00:00,3650,4500,21.4
DATA,2011/06/29,02:00:00,3450,4250,21.2
DATA,2011/06/29,03:00:00,3600,4050,21
DATA,2011/06/29,04:00:00,3900,4350,20.8

3.12.3 Comparison Window CSV Output File Data Structure

The following shows the CSV file data structure output by executing "CSV Export" in the Comparison Window.
The user can output the data at a specified period, channel and summary unit in a CSV file from the currently open "summary data" DB.

(1) Header Section

DATE,TIME,MSEC,<Data type name (1) 1>(<Unit (1) 1>)(<Channel Name (1) {n}>),…
DATE,TIME,MSEC,<Data type name (2) 1>(<Unit (2) 1>)(<Channel Name (2) {n}>),…
…..

(1): Comparison source; (2): Comparison target

Item	Description
<Data type name {n}>	The value specified in the "Data type" row in the channel setting window, output for the nth data.
<Unit {n}>	The unit of the data type (specified for each recording device) of the nth data displayed in the graph (The value specified for the "Unit row" in the data type setting window). * "-" is output if the data has no unit. Note that "All data" output uses a different structure.
<Channel Name (1) {n}>	The channel name specified by the user with the server.
<SP>	A half-width space used as a character.

(1): Comparison source; (2): Comparison target

{n}: 1 to the number of repetitions multiplied by the number of recording devices.

(2) Data Section

<Year-Month-Day>,<Time>,<Millisecond>,<Value (1) 1>,…
<Year-Month-Day>,<Time>,<Millisecond>,<Value (2) 1>,…
…..

Item	Description
<Year-Month-Day>	The year, month and day of the displayed graph. Output in the YYYY/MM/DD format.
<Time>	The hour, minute and second of the displayed graph. Output in the hh:mm:ss format. "00" is output for a time value smaller than the non-displayed period. For example, if the display period is "Day" (summary unit: 30 minutes), only "00" or "30" are output for the minute value. The second value is fixed to "00".
<Millisecond>	The millisecond value of the displayed graph. Output in the "000" format. "000" is fixed to the value if the graph does not display momentary values.
<Value {n}>	The value corresponding to the header of the displayed graph. Any of the following values: PI…Integrated value, AVE…Average value, MAX…Maximum value, and MIN…Minimum value * "0" is output for PI, if SUMMARY_TYPE is other than INTEGRAL (Same as the graph area display).

{n}: 1 to the number of repetitions multiplied by the number of recording devices.

[Example 4] The display period is "Year" in the Comparison Window
DATE,TIME,MSEC,Integrated power consumption(kWh)(1F, No.2

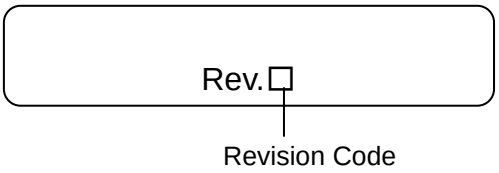
Building),Temperature(℃)(2F, No.2 Building),DATE,TIME,MSEC, Integrated power consumption(kWh)(1F, No.2 Building Temperature),Temperature(℃)(2F, No.2 Building Temperature)
2011/01/01,00:00:00,000,22.43,18.4,2010/01/01,00:00:00,000,12.01,20.5
2011/02/01,00:00:00,000,20.21,18.4,2010/02/01,00:00:00,000,11.89,20.4
2011/03/01,00:00:00,000,22.12,18.3,2010/03/01,00:00:00,000,10.73,20.4
2011/04/01,00:00:00,000,20.03,18.2,2010/04/01,00:00:00,000,10.24,20.3
...

[Example 5] The display period is "Minute" in the Comparison Window
DATE,TIME,MSEC,Integrated power consumption(kWh)(1F, No.2 Building),Temperature(℃)(2F, No.2 Building),DATE,TIME,MSEC, Integrated power consumption(kWh)(1F, No.2 Building Temperature),Temperature(℃)(2F, No.2 Building Temperature)
2011/06/06,12:04:00,000,22.43,18.4,2011/08/24,06:01:00,000,12.01,20.5
2011/06/06,12:04:01,000,20.21,18.4,2011/08/24,06:01:01,000,11.89,20.4
2011/06/06,12:04:02,000,22.12,18.3,2011/08/24,06:01:02,000,10.73,20.4
2011/06/06,12:04:03,000,20.03,18.2,2011/08/24,06:01:03,000,10.24,20.3
...
2011/06/06,12:04:59,000,21.48,18.5,2011/08/24,06:01:59,000,11.96,20.7

Revision History

The specifications of this product are subject to changes without prior notice due to the addition of new functions or modification for improvement. These changes will be reflected in relevant manuals whenever such changes are made.
The revised manual contains the revision history with the manual revision codes and the revision descriptions.

Manual Revision Code
The manual revision code is provided at the lower right corner of the manual.



Revision History

Revision Code	Date	Description
Rev. A	November 2012	First edition.(Japanese)
Rev. B	July 2013	Revised due to upgrade Multi Data Viewer Light software.
Rev. C	August 2013	First edition.(English) Revised due to correction of erroneous description.

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Printed in Japan
Cat. No. X000-E1-01 1009-?M (1009) (?)

As of August 2013 (WEB Ver. 3)